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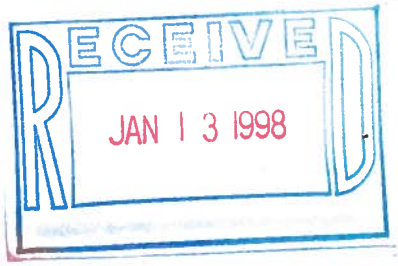
EXplorations

*Total Commitment to Excellence in Theoretical and Applied Science Disciplines*

*8704 Gutierrez N.E. Albuquerque, New Mexico U.S.A. 87111 (505) 292-0805 (Voice/Fax)*

January 5, 1998

Steve Reuter, Project Manager
New Mexico Environment Department
Underground Storage Tank Bureau
Harold Runnels Building
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, New Mexico 87502




Re: Analytical Results and Recommendations from Task 1 Monitor Well Sampling
Leonard's Conoco UST Site, Santa Rosa, New Mexico

Dear Mr. Reuter:

INnovative EXplorations (INEX) has completed a round of groundwater sampling from the existing monitoring wells (4 total) at Leonard's Conoco, Santa Rosa, New Mexico. This work was completed as Task 1 of a proposed Hydrogeologic Investigation for the site. INEX conducted the work to evaluate existing groundwater conditions at the site prior to submitting a site specific Hydrogeologic Investigation (Task 2) workplan for NMED-USTB pre-approval.

The groundwater sampling results are summarized below (Table 1) and complete laboratory analytical reports are attached. Also attached is a piezometric surface map illustrating depths to groundwater, the groundwater gradient, and the currently inferred horizontal extent of groundwater contamination.

Based on INEX's field observations and determinations and the laboratory analytical results, it is our opinion that the extents and magnitude of groundwater contamination have decreased significantly since the initial round of sampling in March 1995. Concommitant with these analytical results, INEX observed that natural attenuation is active at the site. Natural microbial attenuation indicators include dark gray, brackish groundwater (evidence of aerobic heterotrophic metabolism of hydrocarbons), low levels of hydrocarbon odors, and a reduction in extent of the previously identified (March 1995) zone of groundwater contamination; MW-3 and MW-4 reported no detectible contamination, and MW-1 and MW-2 reported significantly reduced levels of contaminants. MTBE (150 ppb) and benzene (180 ppb) report slightly above NMED-USTB and NMWQCC action levels in MW-1; MW-2 reports below action levels for all constituents except EDC (15 ppb) which is only 1.5x the action level.

INEX recommends and requests on behalf of the owner, that NMED-USTB grant a variance to completion of the Hydrogeologic Investigation (Task 2 of proposed INEX workplan) and that groundwater conditions at the site be monitored for the next 12 months ( e.g., semi-annual sampling) to confirm that natural attenuation will continue to remediate the groundwater contamination. INEX also believes that with addition of bioenhancers (e.g., bionutrient based humate solution; e.g., PETREX brand) can augment microbial degradation of remaining hydrocarbons and within 1 year likely reduce groundwater contaminant levels to below NMED and NMWQCC action levels.

Upon your review of the enclosed analytical results and INEX's recommendations, please advise Mr. Leonard Gonzales by letter response and forward a copy of your letter to Ms. Mira Gonzales and INEX. If you have any questions or need additional information, please call me.

Kindest regards,
INnovative EXplorations

William I. Mansker, Ph.D.
Proprietor/NMCS #067

**Groundwater Analytical Results, Existing Wells at Leonard's Conoco Site**
**(All results in ug/L, ppb)**

| Well | MTBE | Benzene | Toluene | Ethyl Benzene | Xylenes | EDB | EDC | TMB |
|---|---|---|---|---|---|---|---|---|
| NMED AL | 100 | 10 | 750 | 750 | 620 | 0.1 | 10 | |
| MW-1 | | | | | | | | |
| 3/31/95 | 320 | 440 | 25 | 400 | 81 | NA | NA | NA |
| 11/7/97 | 150 | 180 | 2.7 | 36 | 8.5 | BDL | 13 | 18 |
| MW-2 | | | | | | | | |
| 3/31/95 | 4.5 | 420 | 6.4 | 540 | 86 | NA | NA | NA |
| 11/7/97 | 1.2 | 3.3 | BDL | 1.6 | 2.3 | BDL | 15 | 4.6 |
| MW-3 | | | | | | | | |
| 3/31/95 | BDL | 39 | 8.2 | 6.3 | 15 | NA | NA | NA |
| 11/7/97 | BDL | BDL | BDL | BDL | BDL | BDL | 3.2 | BDL |
| MW-4 | | | | | | | | |
| 3/31/95 | BDL | BDL | 3.0 | BDL | 2.9 | NA | NA | NA |
| 11/7/97 | BDL | BDL | BDL | BDL | BDL | BDL | BDL | BDL |

**LEONARDS CONOCO TASK #1 - Field Notes**

**Lv ABQ 0800; Ar 1000**
**Lv SR 1500; Ar 1630**

**Meet with Leonard Gonzales**
**Locate wells; MW-1 covered; approx. 1 hr to locate**

**WLMs @ BTOC (previous unmarked; North edge of TOC):**

| | | TOC | WATER ELEV. |
|---|---|---|---|
| MW-1 | - 14.56' | 4595.44 | 4580.88 |
| MW-2 | - 15.24' | 4595.68 | 4580.44 |
| MW-3 | - 12.84' | 4594.06 | 4581.22 |
| MW-4 | - 10.84' | 4590.18 | 4579.34 |

**Purge wells approx. 5 gallons; wait 30 minutes**

**Repurge successive bailers until parameters stabilize**

**Sample Physico-chemical Parameters:**

| | T | C | pH |
|---|---|---|---|
| MW-1 | 20.5 | 2.91 | 7.10 |
| MW-2 | 20.7 | 3.04 | 7.19 |
| MW-3 | 20.7 | 3.78 | 7.35 |
| MW-4 | 21.4 | 3.02 | 7.27 |

**T = temperature degrees C; C = conductivity uS/cm; pH = Units**

**Rising head test on MW-2; bailed dry, slow recovery**

| TOC WLM | Cumm. Seconds |
|---|---|
| 25.0 - 24.9 | 25 |
| 24.9 - 24.8 | 54 |
| 24.8 - 24.7 | 126 |
| 24.7 - 24.6 | 154 |
| 24.6 - 24.5 | 223 |

**Average Recovery = 0.002'/sec; = 0.135'/min**

# Hall Environmental Analysis Laboratory, Inc.

Hall Environmental Analysis Laboratory
4901 Hawkins NE, Suite A
Albuquerque, NM 87109
(505)345-3975

12/3/97

INEX
8704 Gutierrez NE
Albuquerque, NM 87111

Dear Mr. William Mansker, PhD.,

Enclosed are the results for the analyses that were requested. These were done according to EPA procedures or the equivalent.

Detection limits are determined by EPA methodology. No determination of compounds below these levels (denoted by the nd or < sign) has been made.

Please don't hesitate to contact me for any additional information or clarifications.

Sincerely,

Scott Hallenbeck 12/5/97

Scott Hallenbeck
Lab Manager

Project: 9711028/ Leonard's Conoco

## Results for sample: 9711071410-1 .1111 - 1

| | |
|---|---|
| Date collected: 11/7/97 | Date received: 11/10/97 |
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-1 |
| Project Manager: William Mansker | Sampled by: W. Mansker |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | 180 | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane cl-428 | 7.0 | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| sec-Butylbenzene fr. Benzene | 2.8 | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane EDC | 13 | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for Sample: 9711071410-1

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | 36 | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | 3.0 | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | nd | 5.0 | PPB (µg/L) |
| n-Propylbenzene | 8.8 | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | 2.7 | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | 12 | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | 18 | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | 8.5 | 1.0 | PPB (µg/L) |

DBFM (Surrogate) Recovery = 97 %
1,2-DCA-d4 (Surrogate) Recovery = 94 %
Toluene-d8 (Surrogate) Recovery = 103 %
BFB (Surrogate) Recovery = 103 %

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

**Results for sample: 9711071420-2** MW-2

| | |
|---|---|
| Date collected: 11/7/97 | Date received: 11/10/97 |
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-2 |
| Project Manager: William Mansker | Sampled by: W. Mansker |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | 3.3 | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane | nd | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | 2.3 | 1.0 | PPB (µg/L) |
| sec-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane | 15 | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for Sample: 9711071420-2

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | 1.6 | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | 1.2 | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | 5.3 | 5.0 | PPB (µg/L) |
| n-Propylbenzene | 4.1 | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | 4.6 | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | 2.3 | 1.0 | PPB (µg/L) |

DBFM (Surrogate) Recovery = 94 %
1,2-DCA-d4 (Surrogate) Recovery = 98 %
Toluene-d8 (Surrogate) Recovery = 98 %
BFB (Surrogate) Recovery = 98 %

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

## Results for sample: 9711071427-3 MW-3

| | |
|---|---|
| Date collected: 11/7/97 | Date received: 11/10/97 |
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-3 |
| Project Manager: William Mansker | Sampled by: W. Mansker |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | nd | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane | nd | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| sec-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane | 3.2 | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for Sample: 9711071427-3

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | nd | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | nd | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | nd | 5.0 | PPB (µg/L) |
| n-Propylbenzene | nd | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | nd | 1.0 | PPB (µg/L) |

DBFM (Surrogate) Recovery = 99 %
1,2-DCA-d4 (Surrogate) Recovery = 99 %
Toluene-d8 (Surrogate) Recovery = 98 %
BFB (Surrogate) Recovery = 96 %

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

## Results for sample: Field Blank

| | |
|---|---|
| Date collected: 11/7/97 | Date received: 11/10/97 |
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-4 |
| Project Manager: William Mansker | Sampled by: W. Mansker |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | nd | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane | nd | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| sec-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for Sample: Field Blank

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | nd | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | nd | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | nd | 5.0 | PPB (µg/L) |
| n-Propylbenzene | nd | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | nd | 1.0 | PPB (µg/L) |

DBFM (Surrogate) Recovery = 106 %
1,2-DCA-d4 (Surrogate) Recovery = 95 %
Toluene-d8 (Surrogate) Recovery = 102 %
BFB (Surrogate) Recovery = 92 %

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

## Results for sample: 9711071435-4 MW-4

| | |
|---|---|
| Date collected: 11/7/97 | Date received: 11/10/97 |
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-5 |
| Project Manager: William Mansker | Sampled by: W. Mansker |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | nd | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane | nd | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| sec-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for Sample: 9711071435-4

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | nd | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | nd | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | nd | 5.0 | PPB (µg/L) |
| n-Propylbenzene | nd | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | nd | 1.0 | PPB (µg/L) |

| | |
|---|---|
| DBFM (Surrogate) Recovery = | 100 % |
| 1,2-DCA-d4 (Surrogate) Recovery = | 94 % |
| Toluene-d8 (Surrogate) Recovery = | 100 % |
| BFB (Surrogate) Recovery = | 92 % |

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

## Results for QC: Reagent Blank

| | |
|---|---|
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: RB 11/21,24 |
| Project Manager: William Mansker | Sampled by: NA |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| Benzene | nd | 1.0 | PPB (µg/L) |
| Bromobenzene | nd | 1.0 | PPB (µg/L) |
| Bromochloromethane | nd | 1.0 | PPB (µg/L) |
| Bromodichloromethane | nd | 1.0 | PPB (µg/L) |
| Bromoform | nd | 1.0 | PPB (µg/L) |
| Bromomethane | nd | 1.0 | PPB (µg/L) |
| n-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| sec-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| tert-Butylbenzene | nd | 1.0 | PPB (µg/L) |
| Carbon Tetrachloride | nd | 1.0 | PPB (µg/L) |
| Chlorobenzene | nd | 1.0 | PPB (µg/L) |
| Chloroethane | nd | 2.0 | PPB (µg/L) |
| Chloroform | nd | 1.0 | PPB (µg/L) |
| Chloromethane | nd | 2.0 | PPB (µg/L) |
| 2-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| 4-Chlorotoluene | nd | 1.0 | PPB (µg/L) |
| Dibromochloromethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromo-3-chloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dibromoethane (EDB) | nd | 1.0 | PPB (µg/L) |
| Dibromomethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,4-Dichlorobenzene | nd | 1.0 | PPB (µg/L) |
| Dichlorodifluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloroethene | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Cis ) | nd | 1.0 | PPB (µg/L) |
| 1,2-Dichloroethene (Trans) | nd | 1.0 | PPB (µg/L) |
| Dichloromethane | nd | 2.0 | PPB (µg/L) |
| 1,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,3-Dichloropropane | nd | 1.0 | PPB (µg/L) |

## Results for QC: Reagent Blank

**Test: EPA 8260 Continued**

| | | | |
|---|---|---|---|
| 2,2-Dichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,1-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| cis-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| trans-1,3-Dichloropropene | nd | 1.0 | PPB (µg/L) |
| Ethylbenzene | nd | 1.0 | PPB (µg/L) |
| Hexachlorobutadiene | nd | 1.0 | PPB (µg/L) |
| Isopropylbenzene | nd | 1.0 | PPB (µg/L) |
| 4-Isopropyltoluene | nd | 1.0 | PPB (µg/L) |
| Naphthalene | nd | 5.0 | PPB (µg/L) |
| n-Propylbenzene | nd | 1.0 | PPB (µg/L) |
| Styrene | nd | 1.0 | PPB (µg/L) |
| 1,1,1,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2,2-Tetrachloroethane | nd | 1.0 | PPB (µg/L) |
| Tetrachloroethene (PCE) | nd | 1.0 | PPB (µg/L) |
| Toluene | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trichlorobenzene | nd | 1.0 | PPB (µg/L) |
| 1,1,1-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| 1,1,2-Trichloroethane | nd | 1.0 | PPB (µg/L) |
| Trichloroethene (TCE) | nd | 1.0 | PPB (µg/L) |
| Trichlorofluoromethane | nd | 1.0 | PPB (µg/L) |
| 1,2,3-Trichloropropane | nd | 1.0 | PPB (µg/L) |
| 1,2,4-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| 1,3,5-Trimethylbenzene | nd | 1.0 | PPB (µg/L) |
| Vinyl Chloride | nd | 1.0 | PPB (µg/L) |
| Xylenes (Total) | nd | 1.0 | PPB (µg/L) |

| | |
|---|---|
| DBFM (Surrogate) Recovery = | 102 % |
| 1,2-DCA-d4 (Surrogate) Recovery = | 96 % |
| Toluene-d8 (Surrogate) Recovery = | 102 % |
| BFB (Surrogate) Recovery = | 95 % |

Dilution Factor = 1

**Test: EPA 504**

| Analyte: | Results | Detection Limit | Units |
|---|---|---|---|
| EDB | nd | 0.01 | PPB (µg/L) |

Dilution Factor = 1

## Results for QC: Matrix Spike/ Matrix Spike Duplicate
## Blank Spike/ Blank Spike Duplicate

| | |
|---|---|
| Date extracted: 11/24/97 | Date analyzed: 11/21,24/97 |
| Client: INEX | |
| Project Name: Leonard's Conoco | HEAL #: 9711028-5 MS/MSD BS/BSD 11/24 |
| Project Manager: William Mansker | Sampled by: NA |
| Matrix: Aqueous | |

**Test: EPA 8260**

| Compound | Sample Result | Amount Added | Matrix Spike | MS % | MS Dup | MSD % | RPD |
|---|---|---|---|---|---|---|---|
| 1,1-DCE | <1.0 | 20.0 | 22.4 | 112 | 22.9 | 114 | 2 |
| Benzene | <1.0 | 20.0 | 20.7 | 104 | 22.3 | 112 | 8 |
| TCE | <1.0 | 20.0 | 20.0 | 100 | 21.5 | 107 | 7 |
| Toluene | <1.0 | 20.0 | 21.2 | 106 | 21.7 | 109 | 3 |
| Chlorobenzene | <1.0 | 20.0 | 20.6 | 103 | 21.5 | 107 | 4 |

**Test: EPA 504**

| Compound | Sample Result | Amount Added | Blank Spike | BS % | BS Dup | BSD % | RPD |
|---|---|---|---|---|---|---|---|
| EDB | <0.001 | 0.10 | 0.094 | 94 | 0.096 | 96 | 2 |

# CHAIN-OF-CUSTODY RECORD


**HALL ENVIRONMENTAL ANALYSIS LABORATORY**
4901 Hawkins NE, Suite A
Albuquerque, New Mexico 87109
505.345.3975
Fax 505.345.4107


Client: INEX

Project Name: LEONARD'S CONOCO.

Address: 8704 Gutierrez NE ALBQ, NM 87111

Project #:

Project Manager: W. L. MANSKER

Phone #: 292-0805

Sampler: W. Mansker

Fax #: Same

Samples Cold?: ☐ Yes ☐ No

| Date | Time | Matrix | Sample I.D. No. | Number/Volume | Preservative | | | HEAL No. | ANALYSIS REQUEST | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $HgCl_2$ | HCl | | | BTEX + MTBE (602/8020) | BTEX + MTBE + TPH (Gasoline Only) | TPH Method 8015 MOD (Gas/Diesel) | TPH (Method 418.1) | 8010/8020 Volatiles | EDB (Method 504) | EDC (Method 8010) | 8310 (PNA or PAH) | RCRA 8 Metals | Cations (Na, K, Ca, Mg) | Anions (F, Cl, $NO_3$, $NO_2$, $PO_4$, $SO_4$) | 8080 Pesticides / PCB's | 8260 (VOA) | 8270 (Semi-VOA) | | | Air Bubbles or Headspace (Y or N) |
| 11/7/97 | 1410 | $H_2O$ | 971107 1440-1 | 2 en. 40ml VdA's | ✓ | | | 9711028-1 | | | | | | X | | | | | | | X | | | | |
| " | 1420 | " | 971107 1420-2 | " | ✓ | | | -2 | | | | | | X | | | | | | | X | | | | |
| " | 1427 | " | 971107 1427-3 | " | ✓ | | | -3 | | | | | | X | | | | | | | X | | | | |
| " | 1430 | " | 971107 1430 FB | " | ✓ | | | -4 | | | | | | X | | | | | | | X | | | | |
| " | 1435 | " | 971107 1435-4 | " | ✓ | | | -5 | | | | | | X | | | | | | | X | | | | |

| Date | Time | Relinquished By: (Signature) | Received By: (Signature) |
|---|---|---|---|
| 11/10/97 | 1352 | W. Mansker | Andy Freeman 11/10 |
| Date: | Time: | Relinquished By: (Signature) | Received By: (Signature) |

Remarks: [redacted] 24hr