BOREOCHEM MOBILE LAB & CONSULTING, Inc.
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December 31, 1997
Report #: 1595

# FINAL REPORT

# RESULTS OF BTEX & HVO ANALYSIS OF AQUEOUS SAMPLES

# CRAIG TAYLOR EQUIPMENT PROJECT

FOR SHANNON AND WILSON, INC.
2055 HILL ROAD
FAIRBANKS, AK 99707
P: (907) 479-0600 F: (907) 479-5691
SAMPLED BY SHANNON AND WILSON, INC.
2055 HILL ROAD
FAIRBANKS, AK 99707
P: (907) 479-0600 F: (907) 479-5691

# REPORT PREPARED BY BOREOCHEM LABORATORY

REPORT REVIEWED AND APPROVED:

Tim Thomas
Laboratory Director

# SAMPLE INFORMATION

| SAMPLE ID | | CLIENT | COLLECTED | SAMPLE | SAMPLE |
|---|---|---|---|---|---|
| LAB | FIELD | NAME | BY | LOCATION | MATRIX |
| 97120811 | 3115-120597-MW1 | Shannon & Wilson | Ms. Julie Bush | Craig Taylor Equipment | Aqueous |
| 97120812 | 3115-120597-MW2 | Shannon & Wilson | Ms. Julie Bush | Craig Taylor Equipment | Aqueous |
| 97120813 | Trip Blank | Shannon & Wilson | N/A | N/A | Aqueous |

| SAMPLE ID | | COLLECTION | | RECEPTION | |
|---|---|---|---|---|---|
| LAB | FIELD | DATE | TIME | TIME | DATE |
| 97120811 | 3115-120597-MW1 | 12/5/97 | 1645 | 1112 | 12/8/97 |
| 97120812 | 3115-120597-MW2 | 12/5/97 | 1550 | 1112 | 12/8/97 |
| 97120813 | Trip Blank | N/A | N/A | 1112 | 12/8/97 |

| SAMPLE ID | | RECEIVED | SAMPLE | COC# | ANALYSES |
|---|---|---|---|---|---|
| LAB | FIELD | BY | PRES. | | REQ. |
| 97120811 | 3115-120597-MW1 | P.Lotspeich | Cooled to 4 C/HCl | 12897.1 | 601/602 |
| 97120812 | 3115-120597-MW2 | P.Lotspeich | Cooled to 4 C/HCl | 12897.1 | 601/602 |
| 97120813 | Trip Blank | P.Lotspeich | Cooled to 4 C/HCl | 12897.1 | 601/602 |

| SAMPLE ID | | PURGEABLE AROMATICS PROCESSING | | | |
|---|---|---|---|---|---|
| LAB | FIELD | BOTTLES | PREP DATE | ANALYSIS DATE | HOLD TIME |
| 97120811 | 3115-120597-MW1 | 3 x 40 mL VOA | 12/9/97 | 12/9/97 | 14 days |
| 97120812 | 3115-120597-MW2 | 3 x 40 mL VOA | 12/9/97 | 12/9/97 | 14 days |
| 97120813 | Trip Blank | 3 x 40 mL VOA | 12/9/97 | 12/9/97 | 14 days |

| SAMPLE ID | | PURGEABLE HALOCARBON PROCESSING | | | |
|---|---|---|---|---|---|
| LAB | FIELD | BOTTLES | PREP DATE | ANALYSIS DATE | HOLD TIME |
| 97120811 | 3115-120597-MW1 | 3 x 40 mL VOA | 12/12/97 | 12/12/97 | 14 days |
| 97120812 | 3115-120597-MW2 | 3 x 40 mL VOA | 12/12/97 | 12/12/97 | 14 days |
| 97120813 | Trip Blank | 3 x 40 mL VOA | 12/12/97 | 12/12/97 | 14 days |

# RESULTS OF ORGANIC ANALYSES IN PARTS PER BILLION (µg/Liter)

| # | Parameter | 97120811 | 97120812 | 97120813 |
|---|---|---|---|---|
| | | 3115-120597-MW1 | 3115-120597-MW2 | Trip Blank |
| 1 | Benzene | < 1.0 | < 1.0 | < 1.0 |
| 2 | Toluene | 1.5 | < 1.0 | < 1.0 |
| 3 | Chlorobenzene | < 1.0 | < 1.0 | < 1.0 |
| 4 | Ethylbenzene | 4.0 | < 1.0 | < 1.0 |
| 5 | m,p-xylene | 10.7 | < 1.0 | < 1.0 |
| 6 | o-xylene | 7.2 | < 1.0 | < 1.0 |
| 7 | 1,3-dichlorobenzene | < 1.0 | < 1.0 | < 1.0 |
| 8 | 1,4-dichlorobenzene | < 1.0 | < 1.0 | < 1.0 |
| 9 | 1,2-dichlorobenzene | < 1.0 | < 1.0 | < 1.0 |
| 10 | Trichloroethene | < 1.0 | < 1.0 | < 1.0 |
| 11 | Chloromethane | < 1.0 | < 1.0 | < 1.0 |
| 12 | Vinyl Chloride | < 1.0 | < 1.0 | < 1.0 |
| 13 | Bromomethane | < 1.0 | < 1.0 | < 1.0 |
| 14 | Chloroethane | < 1.0 | < 1.0 | < 1.0 |
| 15 | Trichlorofluoromethane (CFC 11) | < 1.0 | < 1.0 | < 1.0 |
| 16 | 1,1-Dichloroethene | < 1.0 | < 1.0 | < 1.0 |
| 17 | 1,2-Dichloroethane | < 1.0 | < 1.0 | < 1.0 |
| 18 | Methylene Chloride | < 1.0 | < 1.0 | < 1.0 |
| 19 | trans-1,2-Dichloroethene | < 1.0 | < 1.0 | < 1.0 |
| 20 | 1,1-Dichloroethane | < 1.0 | < 1.0 | < 1.0 |
| 21 | Chloroform | < 1.0 | < 1.0 | < 1.0 |
| 22 | 1,1,1-Trichloroethane (TCA) | < 1.0 | < 1.0 | < 1.0 |
| 23 | Carbon Tetrachloride | < 1.0 | < 1.0 | < 1.0 |
| 24 | 1,2-Dichloropropane | < 1.0 | < 1.0 | < 1.0 |
| 25 | Bromodichloromethane | < 1.0 | < 1.0 | < 1.0 |
| 26 | 2-Chloroethyl Vinyl Ether | < 1.0 | < 1.0 | < 1.0 |
| 27 | trans-1,3-Dichloropropene | < 1.0 | < 1.0 | < 1.0 |
| 28 | cis-1,3-Dichloropropene | < 1.0 | < 1.0 | < 1.0 |
| 29 | 1,1,2-Trichloroethane | < 1.0 | < 1.0 | < 1.0 |
| 30 | Tetrachloroethene (PCE) | < 1.0 | < 1.0 | < 1.0 |
| 31 | Dibromochloromethane | < 1.0 | < 1.0 | < 1.0 |
| 32 | Bromoform | < 1.0 | < 1.0 | < 1.0 |
| 33 | 1,1,2,2-Tetrachloroethane | < 1.0 | < 1.0 | < 1.0 |
| 34 | Total BTEX | 23.4 | N.C. | N.C. |
| 35 | HVO % Surrogate Recovery | 101.0% | 106.0% | 107.0% |
| 36 | BTEX % Surrogate Recovery | 100.6% | 102.4% | 111.0% |
| 37 | HVO Dilution Factor | 1 | 1 | 1 |
| 38 | BTEX Dilution Factor | 1 | 1 | 1 |
| 39 | HVO PQL | 1.0 | 1.0 | 1.0 |
| 40 | BTEX PQL | 1.0 | 1.0 | 1.0 |

# QUALITY CONTROL DATA

| # | Parameter | Spike TV (ppm) | Spike(1) FV (ppm) | Spike(2) FV (ppm) | Average Rec. (%) | RPD (%) | MB Conc. (ppm) | MDL (ppb) |
|---|---|---|---|---|---|---|---|---|
| 1 | Benzene | 0.020 | 0.0208 | 0.0231 | 109.8% | 10.5% | <MDL | 0.2 |
| 2 | Toluene | 0.020 | 0.0209 | 0.0237 | 111.5% | 12.6% | <MDL | 0.2 |
| 3 | m,p-xylene | 0.020 | 0.0199 | 0.0233 | 108.0% | 15.7% | <MDL | 0.4 |
| 4 | 1,1-Dichloroethene | 0.040 | 0.0395 | 0.0392 | 98.4% | 0.8% | <MDL | 0.13 |
| 5 | Trichloroethene | 0.040 | 0.0404 | 0.0431 | 104.4% | 6.5% | <MDL | 0.12 |
| 6 | Tetrachloroethene | 0.040 | 0.0442 | 0.0481 | 115.4% | 8.5% | <MDL | 0.03 |
| 7 | BTEX Lab Control % SS | ---- | 100.1% | 105.5% | ---- | ---- | 92.8% | ---- |
| 8 | HVO Lab Control % SS | ---- | 101.0% | 98.0% | ---- | ---- | 109.0% | ---- |
| 9 | QC Acceptance Limits | ---- | ---- | ---- | 60-130% | 20% | <MDL | ---- |



Phone: (907) 479-5459 $c_1$-$c_{50}$ BOREOCHEM LABORATORY $c_1$-$c_{50}$ Fax: (907) 479-9544

# METHODS

HVO: EPA Method 601: Purgeable Halocarbons; Federal Register; Vol. 49, No. 209/Friday, October 26, 1984.

BTEX: EPA Method 602: Purgeable Aromatics; Federal Register; Vol. 49, No. 209/ Friday, October 26, 1984.

# ABBREVIATIONS/ACRONYMS

| | |
|---|---|
| 4 C: | 4 degrees Centigrade. |
| ID: | Identification Number. |
| SMP: | Sample. |
| FV: | Found value. |
| EXT: | Extraction. |
| ANAL. | Analysis. |
| VOA: | Volatile Organic Analysis. |
| ADEC: | Alaska Department of Environmental Conservation. |
| USACE: | United States Army Corps of Engineers. |
| QA: | Quality Assurance. |
| QC: | Quality Control. |
| PPM: | Parts per million. |
| Surr.: | Surrogate. |
| AFB: | Airforce Base. |
| DRO: | Diesel-range Organic. |
| RRO: | Residual-range Organic. |
| BTEX: | Benzene, Toluene, Ethylbenzene, Xylenes. |
| GRO: | Gas-range organics. |
| TPH: | Total Petroleum Hydrocarbon. |
| FLD ID: | Field Identification number. |
| COC: | Chain-of-Custody. |
| Oz: | Ounce. |
| d.: | Day. |
| Vol.: | Volatile. |
| % SS: | % Surrogate standard recovery. |
| m&p: | Meta and para. |
| o-: | ortho. |
| RPD: | Relative Per cent Difference. |
| DL: | Detection Limit. |
| MRL: | Method Reporting Limit. |
| FP: | Flash Point. |
| VOL: | Volatile . |
| MS: | Matrix Spike. |
| MDL: | Method Detection Limit. |
| MRL: | Method Reporting Limit. |
| NA: | Not Applicable. |
| NC: | Not Calculable. |

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# Chain of Custody Record

Page 1 of 1
Laboratory Borealchem
Attn: Tim
COC#12897.1
NCRF

**Analysis Parameters/Sample Container Description**
(include preservative if used)

| Sample Identity | Lab No. | Time | Date Sampled (1997) | Comp. | Grab | EPA 601 | EPA 602 | | | | | Total Number of Containers | Remarks/Matrix |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3115-120597-MW1 | | 1645 | 12-5 | | ✓ | ✓ | ✓ | | | | | 3 | water |
| 3115-120597-MW2 | | 1550 | " | | ✓ | ✓ | ✓ | | | | | 3 | " |
| | | | | | | | | | | | | | |
| Trip Blank | | 0800 | 12-5 | | ✓ | ✓ | ✓ | | | | | 3 | water |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| Project Information | Sample Receipt |
|---|---|
| Project Number: X-0311-51 | Total Number of Containers |
| Project Name: Craig Taylor Equip | COC Seals/Intact? Y/N/NA |
| Contact: Dennis Peterson | Received Good Cond./Cold |
| Ongoing Project? Yes [X] No [ ] | Delivery Method: 3.5°C |
| Sampler: Julie Bush | (attach shipping bill, if any) |

**Instructions**

Requested Turn Around Time: Standard

Special Instructions:
PO 403176

| Relinquished By: 1. | Relinquished By: 2. | Relinquished By: 3. |
|---|---|---|
| Signature: Julie Bush Time: 1112 | Signature: Time: | Signature: Time: |
| Printed Name: Julie Bush Date: 12-8-97 | Printed Name: Date: | Printed Name: Date: |
| Company: Shannon & Wilson | Company: | Company: |

| Received By: 1. | Received By: 2. | Received By: 3. |
|---|---|---|
| Signature: Paula L. Lotspeich Time: 11:12 | Signature: Time: | Signature: Time: |
| Printed Name: Paula L. Lotspeich Date: 12-8-97 | Printed Name: Date: | Printed Name: Date: |
| Company: Borealchem | Company: | Company: |

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR