H0566-TMA/RECRA

RECRA ENVIRONMENTAL INC.

0052639

*Chemical and Environmental Measurement Information*

**Recra LabNet Philadelphia**
**Analytical Report**
****REVISION****

**Client :** TNU-HANFORD B99-078
**RFW # :** 9910L333, 9910L335, 9910L344
**SDG/SAF #:** H0566/B99-078

**W.O. #:** 10985-001-001-9999-00
**Date Received:** 10-09,11,12-99

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**SEMIVOLATILE**

This narrative was corrected to add the TIC search for Tributylphosphate.

Seven (7) soil samples were collected on 10-07-99.

The samples and their associated QC samples were extracted on 10-19-99 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270B for TCL Semivolatile target compounds on 10-22,24-99.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperatures upon receipt have been recorded on the chain-of-custodies.
2. The required holding times for extraction and analysis were met.
3. Non-target compounds were detected in the samples.
4. All surrogate recoveries were within EPA QC limits.
5. All matrix spike recoveries were within EPA QC limits.
6. All blank spike recoveries were within EPA QC limits.
7. The samples were spectrally searched for Butylated Hydroxytoluene and Tributylphosphate; however, they were not identified in the samples.

J. Michael Taylor
Vice President
Philadelphia Analytical Laboratory

01-17-00
Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 27 pages.



208 Welsh Pool Road • Lionville, PA 19341-1333 • (610) 280-3000 • Fax (610) 280-3041

# GLOSSARY OF BNA DATA

## DATA QUALIFIERS

| | | |
|---|---|---|
| **U** | = | Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture. |
| **J** | = | Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J. |
| **B** | = | This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound. |
| **E** | = | Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution. |
| **D** | = | Identifies all compounds identified in an analysis at a secondary dilution factor. |
| **I** | = | Interference. |
| **NQ** | = | Result qualitatively confirmed but not able to quantify. |
| **A** | = | Indicates that a TIC is a suspected aldol-condensation product. |
| **N** | = | Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used. |
| **X** | = | This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard). |
| **Y** | = | Additional qualifiers used as required are explained in the case narrative. |

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# GLOSSARY OF BNA DATA

## ABBREVIATIONS

| | | |
|---|---|---|
| **BS** | = | Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported. |
| **BSD** | = | Indicates blank spike duplicate. |
| **MS** | = | Indicates matrix spike. |
| **MSD** | = | Indicates matrix spike duplicate. |
| **DL** | = | Suffix added to sample number to indicate that results are from a diluted analysis. |
| **NA** | = | Not Applicable. |
| **DF** | = | Dilution Factor. |
| **NR** | = | Not Required. |
| **SP, Z** | = | Indicates Spiked Compound. |

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**Recra LabNet - Lionville Laboratory**

Semivolatiles by GC/MS, HSL List

RFW Batch Number: **9910L333** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Report Date: 11/03/99 13:54 Page: 1a

| | Cust ID: | B0WKY1 | | B0WKY1 | | B0WKY1 | | B0WKY2 | | B0WKY4 | | B0WKY5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 004 | | 005 | |
| | Matrix: | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | UG/KG | | UG/KG | | UG/KG | | UG/KG | | UG/KG | | UG/KG | |
| Surrogate Recovery | Nitrobenzene-d5 | 69 | % | 68 | % | 59 | % | 68 | % | 31 | % | 69 | % |
| | 2-Fluorobiphenyl | 71 | % | 69 | % | 60 | % | 68 | % | 33 | % | 67 | % |
| | Terphenyl-d14 | 67 | % | 65 | % | 58 | % | 69 | % | 35 | % | 86 | % |
| | Phenol-d5 | 60 | % | 62 | % | 53 | % | 60 | % | 27 | % | 71 | % |
| | 2-Fluorophenol | 66 | % | 65 | % | 56 | % | 64 | % | 30 | % | 64 | % |
| | 2,4,6-Tribromophenol | 63 | % | 65 | % | 56 | % | 58 | % | 21 | % | 70 | % |
| Phenol | | 360 | U | 61 | % | 53 | % | 360 | U | 350 | U | 350 | U |
| bis(2-Chloroethyl)ether | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2-Chlorophenol | | 360 | U | 63 | % | 56 | % | 360 | U | 350 | U | 350 | U |
| 1,3-Dichlorobenzene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 1,4-Dichlorobenzene | | 360 | U | 63 | % | 56 | % | 360 | U | 350 | U | 350 | U |
| 1,2-Dichlorobenzene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2-Methylphenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,2'-oxybis(1-Chloropropane) | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Methylphenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| N-Nitroso-di-n-propylamine | | 360 | U | 72 | % | 59 | % | 360 | U | 350 | U | 350 | U |
| Hexachloroethane | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Nitrobenzene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Isophorone | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2-Nitrophenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,4-Dimethylphenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| bis(2-Chloroethoxy)methane | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,4-Dichlorophenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 1,2,4-Trichlorobenzene | | 360 | U | 68 | % | 61 | % | 360 | U | 350 | U | 350 | U |
| Naphthalene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Chloroaniline | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Hexachlorobutadiene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Chloro-3-methylphenol | | 360 | U | 62 | % | 55 | % | 360 | U | 350 | U | 350 | U |
| 2-Methylnaphthalene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Hexachlorocyclopentadiene | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,4,6-Trichlorophenol | | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,4,5-Trichlorophenol | | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |

*= Outside of EPA CLP QC limits.

RIW Batch Number: 9910L333 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Page: 1b

| Cust ID: | B0WKY1 | | B0WKY1 | | B0WKY1 | | B0WKY2 | | B0WKY4 | | B0WKY5 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 001 MS | | 001 MSD | | 002 | | 004 | | 005 | |
| 2-Chloronaphthalene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2-Nitroaniline | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |
| Dimethylphthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Acenaphthylene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,6-Dinitrotoluene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 3-Nitroaniline | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |
| Acenaphthene | 360 | U | 69 | % | 63 | % | 360 | U | 350 | U | 350 | U |
| 2,4-Dinitrophenol | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |
| 4-Nitrophenol | 890 | U | 67 | % | 60 | % | 890 | U | 860 | U | 870 | U |
| Dibenzofuran | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 2,4-Dinitrotoluene | 360 | U | 63 | % | 56 | % | 360 | U | 350 | U | 350 | U |
| Diethylphthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Chlorophenyl-phenylether | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Fluorene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Nitroaniline | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |
| 4,6-Dinitro-2-methylphenol | 890 | U | 890 | U | 890 | U | 890 | U | 860 | U | 870 | U |
| N-Nitrosodiphenylamine (1) | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 4-Bromophenyl-phenylether | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Hexachlorobenzene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Pentachlorophenol | 890 | U | 72 | % | 63 | % | 890 | U | 860 | U | 870 | U |
| Phenanthrene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Anthracene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Carbazole | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Di-n-butylphthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Fluoranthene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Pyrene | 360 | U | 70 | % | 63 | % | 360 | U | 350 | U | 350 | U |
| Butylbenzylphthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| 3,3'-Dichlorobenzidine | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Benzo(a)anthracene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Chrysene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| bis(2-Ethylhexyl)phthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Di-n-octyl phthalate | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Benzo(b)fluoranthene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Benzo(k)fluoranthene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Benzo(a)pyrene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Indeno(1,2,3-cd)pyrene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Dibenz(a,h)anthracene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |
| Benzo(g,h,i)perylene | 360 | U | 360 | U | 360 | U | 360 | U | 350 | U | 350 | U |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

| | | | | | |
|---|---|---|---|---|---|
| | Cust ID: | SBLKEU | | SBLKEU BS | |
| Sample Information | RFW#: | 99LE1275-MB1 | | 99LE1275-MB1 | |
| | Matrix: | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.00 | |
| | Units: | UG/KG | | UG/KG | |
| Surrogate Recovery | Nitrobenzene-d5 | 80 | % | 76 | % |
| | 2-Fluorobiphenyl | 79 | % | 76 | % |
| | Terphenyl-d14 | 79 | % | 75 | % |
| | Phenol-d5 | 73 | % | 72 | % |
| | 2-Fluorophenol | 77 | % | 74 | % |
| | 2,4,6-Tribromophenol | 69 | % | 76 | % |
| Phenol | | 330 | U | 70 | % |
| bis(2-Chloroethyl)ether | | 330 | U | 330 | U |
| 2-Chlorophenol | | 330 | U | 73 | % |
| 1,3-Dichlorobenzene | | 330 | U | 330 | U |
| 1,4-Dichlorobenzene | | 330 | U | 72 | % |
| 1,2-Dichlorobenzene | | 330 | U | 330 | U |
| 2-Methylphenol | | 330 | U | 330 | U |
| 2,2'-oxybis(1-Chloropropane) | | 330 | U | 330 | U |
| 4-Methylphenol | | 330 | U | 330 | U |
| N-Nitroso-di-n-propylamine | | 330 | U | 79 | % |
| Hexachloroethane | | 330 | U | 330 | U |
| Nitrobenzene | | 330 | U | 330 | U |
| Isophorone | | 330 | U | 330 | U |
| 2-Nitrophenol | | 330 | U | 330 | U |
| 2,4-Dimethylphenol | | 330 | U | 330 | U |
| bis(2-Chloroethoxy)methane | | 330 | U | 330 | U |
| 2,4-Dichlorophenol | | 330 | U | 330 | U |
| 1,2,4-Trichlorobenzene | | 330 | U | 77 | % |
| Naphthalene | | 330 | U | 330 | U |
| 4-Chloroaniline | | 330 | U | 330 | U |
| Hexachlorobutadiene | | 330 | U | 330 | U |
| 4-Chloro-3-methylphenol | | 330 | U | 70 | % |
| 2-Methylnaphthalene | | 330 | U | 330 | U |
| Hexachlorocyclopentadiene | | 330 | U | 330 | U |
| 2,4,6-Trichlorophenol | | 330 | U | 330 | U |
| 2,4,5-Trichlorophenol | | 840 | U | 840 | U |

*= Outside of EPA CLP QC limits.

| | | | | |
|---|---|---|---|---|
| Cust ID: | SBLKEU | | SBLKEU BS | |
| RFW#: | 99LE1275-MB1 | | 99LE1275-MB1 | |
| 2-Chloronaphthalene | 330 | U | 330 | U |
| 2-Nitroaniline | 840 | U | 840 | U |
| Dimethylphthalate | 330 | U | 330 | U |
| Acenaphthylene | 330 | U | 330 | U |
| 2,6-Dinitrotoluene | 330 | U | 330 | U |
| 3-Nitroaniline | 840 | U | 840 | U |
| Acenaphthene | 330 | U | 76 | % |
| 2,4-Dinitrophenol | 840 | U | 840 | U |
| 4-Nitrophenol | 840 | U | 73 | % |
| Dibenzofuran | 330 | U | 330 | U |
| 2,4-Dinitrotoluene | 330 | U | 71 | % |
| Diethylphthalate | 330 | U | 330 | U |
| 4-Chlorophenyl-phenylether | 330 | U | 330 | U |
| Fluorene | 330 | U | 330 | U |
| 4-Nitroaniline | 840 | U | 840 | U |
| 4,6-Dinitro-2-methylphenol | 840 | U | 840 | U |
| N-Nitrosodiphenylamine (1) | 330 | U | 330 | U |
| 4-Bromophenyl-phenylether | 330 | U | 330 | U |
| Hexachlorobenzene | 330 | U | 330 | U |
| Pentachlorophenol | 840 | U | 81 | % |
| Phenanthrene | 330 | U | 330 | U |
| Anthracene | 330 | U | 330 | U |
| Carbazole | 330 | U | 330 | U |
| Di-n-butylphthalate | 330 | U | 330 | U |
| Fluoranthene | 330 | U | 330 | U |
| Pyrene | 330 | U | 75 | % |
| Butylbenzylphthalate | 330 | U | 330 | U |
| 3,3'-Dichlorobenzidine | 330 | U | 330 | U |
| Benzo(a)anthracene | 330 | U | 330 | U |
| Chrysene | 330 | U | 330 | U |
| bis(2-Ethylhexyl)phthalate | 330 | U | 330 | U |
| Di-n-octyl phthalate | 330 | U | 330 | U |
| Benzo(b)fluoranthene | 330 | U | 330 | U |
| Benzo(k)fluoranthene | 330 | U | 330 | U |
| Benzo(a)pyrene | 330 | U | 330 | U |
| Indeno(1,2,3-cd)pyrene | 330 | U | 330 | U |
| Dibenz(a,h)anthracene | 330 | U | 330 | U |
| Benzo(g,h,i)perylene | 330 | U | 330 | U |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

Recra LabNet - Lionville Laboratory
Semivolatiles by GC/MS, HSL List

RFW Batch Number: 9910L335 Client: TNU-HANFORD B99-078 Work Order: 10985001001 Report Date: 11/03/99 14:29 Page: 1a

| | Cust ID: | B0WKY6 | | B0WKY7 | | SBLKEU | | SBLKEU BS | |
|---|---|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 002 | | 99LE1275-MB1 | | 99LE1275-MB1 | |
| | Matrix: | SOIL | | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| | Units: | UG/KG | | UG/KG | | UG/KG | | UG/KG | |
| Surrogate Recovery | Nitrobenzene-d5 | 74 | % | 71 | % | 80 | % | 76 | % |
| | 2-Fluorobiphenyl | 71 | % | 70 | % | 79 | % | 76 | % |
| | Terphenyl-d14 | 82 | % | 84 | % | 79 | % | 75 | % |
| | Phenol-d5 | 71 | % | 72 | % | 73 | % | 72 | % |
| | 2-Fluorophenol | 64 | % | 64 | % | 77 | % | 74 | % |
| | 2,4,6-Tribromophenol | 63 | % | 63 | % | 69 | % | 76 | % |
| Phenol | | 340 | U | 330 | U | 330 | U | 70 | % |
| bis(2-Chloroethyl)ether | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2-Chlorophenol | | 340 | U | 330 | U | 330 | U | 73 | % |
| 1,3-Dichlorobenzene | | 340 | U | 330 | U | 330 | U | 330 | U |
| 1,4-Dichlorobenzene | | 340 | U | 330 | U | 330 | U | 72 | % |
| 1,2-Dichlorobenzene | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2-Methylphenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,2'-oxybis(1-Chloropropane) | | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Methylphenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| N-Nitroso-di-n-propylamine | | 340 | U | 330 | U | 330 | U | 79 | % |
| Hexachloroethane | | 340 | U | 330 | U | 330 | U | 330 | U |
| Nitrobenzene | | 340 | U | 330 | U | 330 | U | 330 | U |
| Isophorone | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2-Nitrophenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,4-Dimethylphenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| bis(2-Chloroethoxy)methane | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,4-Dichlorophenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| 1,2,4-Trichlorobenzene | | 340 | U | 330 | U | 330 | U | 77 | % |
| Naphthalene | | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Chloroaniline | | 340 | U | 330 | U | 330 | U | 330 | U |
| Hexachlorobutadiene | | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Chloro-3-methylphenol | | 340 | U | 330 | U | 330 | U | 70 | % |
| 2-Methylnaphthalene | | 340 | U | 330 | U | 330 | U | 330 | U |
| Hexachlorocyclopentadiene | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,4,6-Trichlorophenol | | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,4,5-Trichlorophenol | | 860 | U | 840 | U | 840 | U | 840 | U |

*= Outside of EPA CLP QC limits.

| Cust ID: | B0WKY6 | | B0WKY7 | | SBLKEU | | SBLKEU BS | |
|---|---|---|---|---|---|---|---|---|
| RFW#: | 001 | | 002 | | 99LE1275-MB1 | | 99LE1275-MB1 | |
| 2-Chloronaphthalene | 340 | U | 330 | U | 330 | U | 330 | U |
| 2-Nitroaniline | 860 | U | 840 | U | 840 | U | 840 | U |
| Dimethylphthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| Acenaphthylene | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,6-Dinitrotoluene | 340 | U | 330 | U | 330 | U | 330 | U |
| 3-Nitroaniline | 860 | U | 840 | U | 840 | U | 840 | U |
| Acenaphthene | 340 | U | 330 | U | 330 | U | 76 | % |
| 2,4-Dinitrophenol | 860 | U | 840 | U | 840 | U | 840 | U |
| 4-Nitrophenol | 860 | U | 840 | U | 840 | U | 73 | % |
| Dibenzofuran | 340 | U | 330 | U | 330 | U | 330 | U |
| 2,4-Dinitrotoluene | 340 | U | 330 | U | 330 | U | 71 | % |
| Diethylphthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Chlorophenyl-phenylether | 340 | U | 330 | U | 330 | U | 330 | U |
| Fluorene | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Nitroaniline | 860 | U | 840 | U | 840 | U | 840 | U |
| 4,6-Dinitro-2-methylphenol | 860 | U | 840 | U | 840 | U | 840 | U |
| N-Nitrosodiphenylamine (1) | 340 | U | 330 | U | 330 | U | 330 | U |
| 4-Bromophenyl-phenylether | 340 | U | 330 | U | 330 | U | 330 | U |
| Hexachlorobenzene | 340 | U | 330 | U | 330 | U | 330 | U |
| Pentachlorophenol | 860 | U | 840 | U | 840 | U | 81 | % |
| Phenanthrene | 340 | U | 330 | U | 330 | U | 330 | U |
| Anthracene | 340 | U | 330 | U | 330 | U | 330 | U |
| Carbazole | 340 | U | 330 | U | 330 | U | 330 | U |
| Di-n-butylphthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| Fluoranthene | 340 | U | 330 | U | 330 | U | 330 | U |
| Pyrene | 340 | U | 330 | U | 330 | U | 75 | % |
| Butylbenzylphthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| 3,3'-Dichlorobenzidine | 340 | U | 330 | U | 330 | U | 330 | U |
| Benzo(a)anthracene | 340 | U | 330 | U | 330 | U | 330 | U |
| Chrysene | 340 | U | 330 | U | 330 | U | 330 | U |
| bis(2-Ethylhexyl)phthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| Di-n-octyl phthalate | 340 | U | 330 | U | 330 | U | 330 | U |
| Benzo(b)fluoranthene | 340 | U | 330 | U | 330 | U | 330 | U |
| Benzo(k)fluoranthene | 340 | U | 330 | U | 330 | U | 330 | U |
| Benzo(a)pyrene | 340 | U | 330 | U | 330 | U | 330 | U |
| Indeno(1,2,3-cd)pyrene | 340 | U | 330 | U | 330 | U | 330 | U |
| Dibenz(a,h)anthracene | 340 | U | 330 | U | 330 | U | 330 | U |
| Benzo(g,h,i)perylene | 340 | U | 330 | U | 330 | U | 330 | U |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

**Recra LabNet - Lionville Laboratory**

Semivolatiles by GC/MS, HSL List

Report Date: 11/11/99 11:24

RFW Batch Number: **9910L344** Client: **TNU-HANFORD B99-078** Work Order: 10985001001 Page: 1a

| | Cust ID: | B0WKY3 | | SBLKEU | | SBLKEU BS | |
|---|---|---|---|---|---|---|---|
| Sample Information | RFW#: | 001 | | 99LE1275-MB1 | | 99LE1275-MB1 | |
| | Matrix: | SOIL | | SOIL | | SOIL | |
| | D.F.: | 1.00 | | 1.00 | | 1.00 | |
| | Units: | UG/KG | | UG/KG | | UG/KG | |
| Surrogate Recovery | Nitrobenzene-d5 | 74 | % | 80 | % | 76 | % |
| | 2-Fluorobiphenyl | 73 | % | 79 | % | 76 | % |
| | Terphenyl-d14 | 84 | % | 79 | % | 75 | % |
| | Phenol-d5 | 72 | % | 73 | % | 72 | % |
| | 2-Fluorophenol | 65 | % | 77 | % | 74 | % |
| | 2,4,6-Tribromophenol | 69 | % | 69 | % | 76 | % |
| Phenol | | 350 | U | 330 | U | 70 | % |
| bis(2-Chloroethyl)ether | | 350 | U | 330 | U | 330 | U |
| 2-Chlorophenol | | 350 | U | 330 | U | 73 | % |
| 1,3-Dichlorobenzene | | 350 | U | 330 | U | 330 | U |
| 1,4-Dichlorobenzene | | 350 | U | 330 | U | 72 | % |
| 1,2-Dichlorobenzene | | 350 | U | 330 | U | 330 | U |
| 2-Methylphenol | | 350 | U | 330 | U | 330 | U |
| 2,2'-oxybis(1-Chloropropane) | | 350 | U | 330 | U | 330 | U |
| 4-Methylphenol | | 350 | U | 330 | U | 330 | U |
| N-Nitroso-di-n-propylamine | | 350 | U | 330 | U | 79 | % |
| Hexachloroethane | | 350 | U | 330 | U | 330 | U |
| Nitrobenzene | | 350 | U | 330 | U | 330 | U |
| Isophorone | | 350 | U | 330 | U | 330 | U |
| 2-Nitrophenol | | 350 | U | 330 | U | 330 | U |
| 2,4-Dimethylphenol | | 350 | U | 330 | U | 330 | U |
| bis(2-Chloroethoxy)methane | | 350 | U | 330 | U | 330 | U |
| 2,4-Dichlorophenol | | 350 | U | 330 | U | 330 | U |
| 1,2,4-Trichlorobenzene | | 350 | U | 330 | U | 77 | % |
| Naphthalene | | 350 | U | 330 | U | 330 | U |
| 4-Chloroaniline | | 350 | U | 330 | U | 330 | U |
| Hexachlorobutadiene | | 350 | U | 330 | U | 330 | U |
| 4-Chloro-3-methylphenol | | 350 | U | 330 | U | 70 | % |
| 2-Methylnaphthalene | | 350 | U | 330 | U | 330 | U |
| Hexachlorocyclopentadiene | | 350 | U | 330 | U | 330 | U |
| 2,4,6-Trichlorophenol | | 350 | U | 330 | U | 330 | U |
| 2,4,5-Trichlorophenol | | 880 | U | 840 | U | 840 | U |

*= Outside of EPA CLP QC limits.

11

| Cust ID: | B0WKY3 | | SBLKEU | | SBLKEU BS | |
|---|---|---|---|---|---|---|
| RFW#: | 001 | | 99LE1275-MB1 | | 99LE1275-MB1 | |
| 2-Chloronaphthalene | 350 | U | 330 | U | 330 | U |
| 2-Nitroaniline | 880 | U | 840 | U | 840 | U |
| Dimethylphthalate | 350 | U | 330 | U | 330 | U |
| Acenaphthylene | 350 | U | 330 | U | 330 | U |
| 2,6-Dinitrotoluene | 350 | U | 330 | U | 330 | U |
| 3-Nitroaniline | 880 | U | 840 | U | 840 | U |
| Acenaphthene | 350 | U | 330 | U | 76 | % |
| 2,4-Dinitrophenol | 880 | U | 840 | U | 840 | U |
| 4-Nitrophenol | 880 | U | 840 | U | 73 | % |
| Dibenzofuran | 350 | U | 330 | U | 330 | U |
| 2,4-Dinitrotoluene | 350 | U | 330 | U | 71 | % |
| Diethylphthalate | 350 | U | 330 | U | 330 | U |
| 4-Chlorophenyl-phenylether | 350 | U | 330 | U | 330 | U |
| Fluorene | 350 | U | 330 | U | 330 | U |
| 4-Nitroaniline | 880 | U | 840 | U | 840 | U |
| 4,6-Dinitro-2-methylphenol | 880 | U | 840 | U | 840 | U |
| N-Nitrosodiphenylamine (1) | 350 | U | 330 | U | 330 | U |
| 4-Bromophenyl-phenylether | 350 | U | 330 | U | 330 | U |
| Hexachlorobenzene | 350 | U | 330 | U | 330 | U |
| Pentachlorophenol | 880 | U | 840 | U | 81 | % |
| Phenanthrene | 350 | U | 330 | U | 330 | U |
| Anthracene | 350 | U | 330 | U | 330 | U |
| Carbazole | 350 | U | 330 | U | 330 | U |
| Di-n-butylphthalate | 350 | U | 330 | U | 330 | U |
| Fluoranthene | 350 | U | 330 | U | 330 | U |
| Pyrene | 350 | U | 330 | U | 75 | % |
| Butylbenzylphthalate | 350 | U | 330 | U | 330 | U |
| 3,3'-Dichlorobenzidine | 350 | U | 330 | U | 330 | U |
| Benzo(a)anthracene | 350 | U | 330 | U | 330 | U |
| Chrysene | 350 | U | 330 | U | 330 | U |
| bis(2-Ethylhexyl)phthalate | 350 | U | 330 | U | 330 | U |
| Di-n-octyl phthalate | 350 | U | 330 | U | 330 | U |
| Benzo(b)fluoranthene | 350 | U | 330 | U | 330 | U |
| Benzo(k)fluoranthene | 350 | U | 330 | U | 330 | U |
| Benzo(a)pyrene | 350 | U | 330 | U | 330 | U |
| Indeno(1,2,3-cd)pyrene | 350 | U | 330 | U | 330 | U |
| Dibenz(a,h)anthracene | 350 | U | 330 | U | 330 | U |
| Benzo(g,h,i)perylene | 350 | U | 330 | U | 330 | U |

(1) - Cannot be separated from Diphenylamine. *= Outside of EPA CLP QC limits.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY1

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L333-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: D102206

Level: (low/med) LOW Date Received: 10/09/99

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | ALDOL CONDENSATE | 8.81 | 200 | JA |
| 2. | ALDOL CONDENSATE | 9.59 | 90 | JA |
| 3. | ALDOL CONDENSATE | 10.75 | 100 | JA |
| 4. | UNKNOWN | 22.87 | 80 | J |
| 5. | UNKNOWN | 24.79 | 100 | J |
| 6. | ALKANE | 29.17 | 200 | J |
| 7. | ALKANE | 32.92 | 100 | J |
| 8. | UNKNOWN | 38.45 | 100 | J |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY2

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L333-002

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102209

Level: (low/med) LOW Date Received: 10/09/99

% Moisture: 7 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 24.80 | 100 | J |
| 2. | UNKNOWN | 27.24 | 70 | J |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY4

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L333-004

Sample wt/vol: 30.4 (g/mL) G Lab File ID: D102210

Level: (low/med) LOW Date Received: 10/09/99

% Moisture: 5 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY5

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L333-005

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A102408

Level: (low/med) LOW Date Received: 10/09/99

% Moisture: 4 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY6

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L335-001

Sample wt/vol: 30.2 (g/mL) G Lab File ID: A102409

Level: (low/med) LOW Date Received: 10/11/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY7

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L335-002

Sample wt/vol: 30.8 (g/mL) G Lab File ID: A102410

Level: (low/med) LOW Date Received: 10/11/99

% Moisture: 3 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 10/24/99

Injection Volume: 2.0 (uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | | | | |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

B0WKY3

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 9910L344-001

Sample wt/vol: 30.1 (g/mL) G Lab File ID: A102411

Level: (low/med) LOW Date Received: 10/12/99

% Moisture: 6 decanted: (Y/N) __ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/24/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 24.24 | 90 | J |

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CLIENT SAMPLE NO.

SBLKEU

Lab Name: Recra.LabNet Work Order: 10985001001

Client: TNU-HANFORD B99-078

Matrix: (soil/water) SOIL Lab Sample ID: 99LE1275-MB1

Sample wt/vol: 30.0 (g/mL) G Lab File ID: D102205

Level: (low/med) LOW Date Received: 10/19/99

% Moisture: _____ decanted: (Y/N)__ Date Extracted: 10/19/99

Concentrated Extract Volume: 1000(uL) Date Analyzed: 10/22/99

Injection Volume: 2.0(uL) Dilution Factor: 1.00

GPC Cleanup: (Y/N) N pH: 7.0

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

| CAS NUMBER | COMPOUND NAME | RT | EST. CONC. | Q |
|---|---|---|---|---|
| 1. | UNKNOWN | 27.98 | 80 | J |

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 10/09/99 RFW LOT # :9910L333

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| B0WKY1 | 001 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/22/99 |
| B0WKY1 | 001 MS | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/22/99 |
| B0WKY1 | 001 MSD | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/22/99 |
| B0WKY2 | 002 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/22/99 |
| B0WKY4 | 004 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/22/99 |
| B0WKY5 | 005 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/24/99 |
| LAB QC: | | | | | | |
| SBLKEU | MB1 | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |
| SBLKEU | MB1 BS | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 10/11/99 RFW LOT # :9910L335

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| B0WKY6 | 001 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/24/99 |
| B0WKY7 | 002 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/24/99 |

LAB QC:

| | | | | | | |
|---|---|---|---|---|---|---|
| SBLKEU | MB1 | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |
| SBLKEU | MB1 BS | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |

Recra LabNet - Lionville Laboratory
BNA ANALYTICAL DATA PACKAGE FOR
TNU-HANFORD B99-078

DATE RECEIVED: 10/12/99 RFW LOT # :9910L344

| CLIENT ID | RFW # | MTX | PREP # | COLLECTION | EXTR/PREP | ANALYSIS |
|---|---|---|---|---|---|---|
| B0WKY3 | 001 | S | 99LE1275 | 10/07/99 | 10/19/99 | 10/24/99 |
| LAB QC: | | | | | | |
| SBLKEU | MB1 | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |
| SBLKEU | MB1 BS | S | 99LE1275 | N/A | 10/19/99 | 10/22/99 |

| RECRA LabNet Use Only |
|---|
| 9910C333 |

# Custody Transfer Record/Lab Work Request

Page 1 of 1

All

**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

(8) ~~perrone~~ ~~wet lab~~ metals

RECRA LabNet

Client: TNU-Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: OJ
QC: spec  Del: std  TAT: 30 day
Date Rec'd: 10/9/99  Date Due: 11/8/99
Account #:

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | 2 | 2 | | | | | 2 | 1 | 2 | 2 | | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | | |
| | Solid | 1g | 1g | 1 | | | | | 1g | 1 | 1g | 1g | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | |
| | Solid | 250 | 500 | 1 | | | | | 500 | 1 | 250 | LTY | | | | | |
| Preservatives | | | | | | | | | | | | | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | | | | | | | |

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 0624H 0SCSC | 0625H | 0DRO 0PCB | | Met(1) | ICNTO | IPH | Ang(1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | BOWKY1 | | | S | 10/7/99 | 0801 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| 002 | 2 | | | | | 0813 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| ~~003~~ | ~~3~~ | | | | | ~~0822~~ | ~~XX~~ 10/9/99 | | | | | | | |
| 004 | 4 | | | | | 0835 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |
| 005 | 5 | | | | | 0854 | ✓ | ✓ | ✓ | | ✓ | ✓ | ✓ | ✓ |

11/3/99
SB and TL added to all metals samples per client

Special Instructions:
Saf # B99-078

**COMPOSITE WASTE**

DATE/REVISIONS:
#003 1. Samples not Rec'd.
2. Run matrix QC
Met(1) = RCRA + Be, Cu, Ni, Vi, Zn
Ang(1) = ICCL, ICFL, ICNO2, ICNO3, ICPO4,
5. ICSO4, ISFD, INH3N, ICNTO,
6. IN3N2 (ICR6 added 10/13/99)

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| Fed Ex | [signature] | 10-9-99 | 0945 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | ORIGINAL | | |
| | REWRITTEN | | |

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES: 42357953 0289

**RECRA LabNet Use Only**

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # See Below
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec't (Y) or N
Cooler Temp. 3.5 °C

| Bechtel Hanford Inc. | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-135 | Page 1 of 1 |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Bowers/Trice | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: 200 B pond | | SAF No.: B99-078 |
| Ice Chest No.: ERC 96-059 / ERC96-034 | Field Logbook No.: EL-1511 | | Method of Shipment: Fed Ex |
| Shipped To: TMA/RECRA RECRA | Offsite Property No.: A990293 | | Bill of Lading/Air Bill No.: 423519530289 |
| | | | COA: B20CW167/C |

Price Code: 8N

Data Turnaround: 45 Days

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | Cool 4C | None | Cool 4C | Cool 4C | Cool 4C | None | | | | |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | | | | |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | |
| Special Handling and/or Storage | Volume | 60mL | 250mL | 250mL | 500mL | 500mL | 1000mL | 1000mL | | | | |
| SAMPLE ANALYSIS | | Isotopic Uranium | VOA - 8260A (TCL), VOA - 8260A (Add-On) (1-Propanol, Ethanol) | pH (Soil) - 9045 | See item (1) in Special Instructions. | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (2) in Special Instructions. | See item (3) in Special Instructions. | | | | |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOWKY1 | Soil | 10/7/99 | 0801 | | X | X | X | X | X | | | | |
| BOWKY2 | SOIL | 10/7/99 | 0813 | | X | X | X | X | X | | | | |
| BOWKY3 | SOIL | 10/7/99 | 0822 | | X | X | X | X | X | | | | |
| BOWKY4 | SOIL | 10/7/99 | 0835 | | X | X | X | X | X | | | | |
| BOWKY5 | SOIL | 10/7/99 | 0854 | | X | X | X | X | X | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Doug Bowers / Doug Bowers | Date/Time: 10-7-99/1130 | Received By: A of 1B | Date/Time: 10-7-99/1130 |
| Relinquished By: Ref #1B | Date/Time: 10/8/99 0948 | Received By: Bruce Nielsr / R. Nielson | Date/Time: 10/8/99 0948 |
| Relinquished By: Bruce Nielsr / R. Nielson | Date/Time: 10/8/99 1430 | Received By: Federal Express | Date/Time: |
| Relinquished By: Fed Ex | Date/Time: 10-9-99 0945 | Received By: [signature] | Date/Time: 10-9-99 0945 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

(3) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Gamma Spec - Add-on {Americium-241}; Strontium-89,90 – Total Sr; Total Uranium {Uranium}; Isotopic Plutonium; Isotopic Thorium {Thorium-232}; Americium-241

Tie to BØW8C1

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

| LABORATORY SECTION | Received By | Title | Date/Time |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

25

| RECRA LabNet Use Only |
|---|
| 9910L335 |

# Custody Transfer Record/Lab Work Request

Page 1 of 1

All

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: Mu Hanford B99-078
Est. Final Proj. Sampling Date:
Project #: 10985-001-001-9999-00
Project Contact/Phone #:
RECRA Project Manager: Orlette Johnson
QC: spec Del: std TAT: 30 day
Date Rec'd: 10-11-99 Date Due: 11/10/99
Account #:

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Refrigerator # | | 1 | 2 | 1 | | | | | 2 | | | 1 | | | | | |
| #/Type Container | Liquid | | | | | | | | | | | | | | | | |
| | Solid | 1AG | 1AG | 1 | | | | | 1AG | 1 | 1AG | 1AG | | | | | |
| Volume | Liquid | | | | | | | | | | | | | | | | |
| | Solid | 250 | 500 | 1 | | | | | 500 | 1 | 250 | 1L | | | | | |
| Preservatives | | - | - | | | | | | - | | - | - | | | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | pH | | | | | | |

RECRA LabNet Use Only

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | 0624H 0GCSC | 0625H 0DRO | 0PCB | | | | | Met ① | 1CNTO | 1PH | Ang ① | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | BOWKY6 | | | S | 10-7-99 | 0913 | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | | | |
| 002 | BOWKY7 | | | ↓ | ↓ | 0932 | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | | | |

Special Instructions:
Saf # B99-078

COMPOSITE WASTE

DATE/REVISIONS:
Met ① = As, Ba, Be, Cd, Cr, Cu, Pb, Ni,
2. Se, Ag, V, Zn, Hg, 1CR6
Ang ① = 1N3N2, 1CCL, 1CFL, 1CNO2, 1CNO3,
4. 1CPO4, 1CSO4, 1SFD, 1NH3N, 1PH
5.
6. Run matrix QC

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| FedEx | Murray | 10-11-99 | 0940 |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| | ORIGINAL REWRITTEN | | |

Discrepancies Between Samples Labels and COC Record? Y or (N)
NOTES:

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or Hand Delivered ___
Airbill # 423579530890
2) Ambient or (Chilled)
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N
COC Record Present Upon Sample Rec'l (Y) or N
Cooler Temp. 5.2 °C

| Bechtel Hanford Inc. | | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | B99-078-136 | Page 1 of 1 RJN 10/7/99 |
|---|---|---|---|---|

| | | | |
|---|---|---|---|
| Collector: Bowers/Trice | Company Contact: Chris Cearlock | Telephone No.: 372-9574 | Project Coordinator: TRENT, SJ |
| Project Designation: 200 Area Source characterization - 200-CW-1 OU | Sampling Location: 200 B pond | | SAF No.: B99-078 |
| Ice Chest No.: ERC96-034 | Field Logbook No.: EL-1511 | | Method of Shipment: Fed Ex |
| Shipped To: TMA/RECRA RECRA | Offsite Property No.: A990293 | | Bill of Lading/Air Bill No.: 423579530290 |
| | | | COA: B20CW167IC |

Price Code: 8N

Data Turnaround: 45 Days

| POSSIBLE SAMPLE HAZARDS/REMARKS | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Preservation | None | None | None | None | None | Cool 4C | None | Cool 4C | Cool 4C | Cool 4C |
| | Type of Container | aG | aG | aG | aG | aG | aG | aG | aG | aG | aG |
| | No. of Container(s) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Special Handling and/or Storage | Volume | 60mL | 60mL | 60mL | 60mL | 120mL | 250mL | 250mL | 500mL | 500mL | 1000mL |
| SAMPLE ANALYSIS | | Isotopic Uranium | Neptunium-237 | Nickel-63 | Technetium-99 | Tritium - H3 | VOA - 8260A (TCL); VOA - 8260A (Add-On) {1-Propanol, Ethanol} | pH (Soil) - 9045 | See item (1) in Special Instructions. | Semi-VOA - 8270A (TCL); TPH-Diesel Range - WTPH-D; PCBs - 8082 | See item (2) in Special Instructions. |

| Sample No. | Matrix * | Sample Date | Sample Time | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BOW KY6 | Soil | 10/7/99 | 0913 | | | | | | X | X | X | X | X |
| BOW KY7 | Soil | 10/7/99 | 0932 | | | | | | X | X | X | X | X |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |

| CHAIN OF POSSESSION | Sign/Print Names | | |
|---|---|---|---|
| Relinquished By: Doug Bowers | Date/Time: 10-7-99/1130 | Received By: Ref 1B | Date/Time: 10-7-99/1130 |
| Relinquished By: Ref #1B | Date/Time: 10/8/99 1030 | Received By: R. Nielson | Date/Time: 10/8/99 1030 |
| Relinquished By: R. Nielson | Date/Time: 10/8/99 1430 | Received By: Fed Ex | Date/Time: |
| Relinquished By: Fed Ex | Date/Time: 10-11-99 0940 | Received By: T Murray | Date/Time: 10-11-99 0940 |

**SPECIAL INSTRUCTIONS**

See chain of custody comments on SAF B99-078.

(1) ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver}; ICP Metals - 6010A (Supertrace Add-On) {Beryllium, Copper, Nickel, Vanadium, Zinc}; Mercury - 7471 - (CV); Chromium Hex - 7196

(2) NO2/NO3 - 353.1; IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate}; Sulfides - 9030; Ammonia - 350.3; Total Cyanide - 9010

Tie to BØW8C1

COLLECTOR UNAVAILABLE TO SIGN COC

Matrix *: Soil, Water, Vapor, Other Solid, Other Liquid

| LABORATORY SECTION | Received By | Title | Date/Time |
|---|---|---|---|
| FINAL SAMPLE DISPOSITION | Disposal Method | Disposed By | Date/Time |

RECRA LabNet Use Only: 9910L344

# Custody Transfer Record/Lab Work Request

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A11 FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

RECRA LabNet

Client: TMU-Hanford B99-078

Est. Final Proj. Sampling Date:

Project #: 10985-001-001-9999-00

Project Contact/Phone #:

RECRA Project Manager: Orlette Johnson

QC: spec Del: std TAT: 30 day

Date Rec'd: 10-28-99 Date Due: 11/11/99

Account #: 12 10/12/99

| Refrigerator # | | 1 | 2 | 1 | | | | | 2 | | 1 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| #/Type Container | Liquid | | | | | | | | | | | | | | |
| | Solid | 1AG | 1AG | 1 | | | | | 1AG | 1 | 1AG | 1AG | | | |
| Volume | Liquid | | | | | | | | | | | | | | |
| | Solid | 250 | 500 | 1 | | | | | 500 | 1 | 250 | 1L | | | |
| Preservatives | | - | - | | | | | | - | - | - | - | | | |
| ANALYSES REQUESTED | | ORGANIC | | | | | | | INORG | | | | | | |
| | | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | TPH | Anions | | | |
| | | RECRA LabNet Use Only | | | | | | | | | | | | | |
| | | 8260 8260SC | 8270 | 8080 8081B | | | | | Met(1) | 1CNTU | 1PH | Ang(1) | | | |

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

| Lab ID | Client ID/Description | Matrix QC Chosen (✓) MS | MSD | Matrix | Date Collected | Time Collected | VOA | BNA | Pest/PCB | Herb | | | | Metal | CN | TPH | Anions | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 001 | BOUK93 | | | S | 10-7-99 | 0820 | ✓ | ✓ | ✓ | | | | | ✓ | ✓ | ✓ | ✓ | | | |

Special Instructions:

COMPOSITE WASTE

SDG with 9910L333

DATE/REVISIONS:

Met(1) = RCRA + Be, Cu, Ni, V, Zn

Ang(1) 2. ICCL, ICFL, ICNO2, ICNO3, ICPO4, Sulfate

3. ICSO4, ISFD, INH3N, ~~ICNPO~~, INO2

4.

5. No matrix QC Required

6.

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| FedEx | TMurray | 12 10-28-99 | 0930 |
| | | 10/12/99 | |

| Relinquished by | Received by | Date | Time |
|---|---|---|---|
| ORIGINAL | | | |
| REWRITTEN | | | |

RECRA LabNet Use Only

Samples were:
1) Shipped ✓ or
Hand Delivered
Airbill # 4235795302 90
2) Ambient or Chilled
3) Received in Good Condition (Y) or N
4) Labels Indicate Properly Preserved (Y) or N
5) Received Within Holding Times (Y) or N

COC Tape was:
1) Present on Outer Package (Y) or N
2) Unbroken on Outer Package (Y) or N
3) Present on Sample (Y) or N
4) Unbroken on Sample (Y) or N

COC Record Present Upon Sample Rec't (Y) or N

Cooler Temp. 5.2 °C

Discrepancies Between Samples Labels and COC Record? Y or (N)

NOTES: