# Client Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

**Client Sample ID: RW-12-26-12**
**Date Collected: 12/26/12 11:55**
**Date Received: 12/26/12 15:00**

**Lab Sample ID: 440-33540-1**
**Matrix: Water**

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### Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Toluene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| trans-1,2-Dichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| trans-1,3-Dichloropropene | ND | | 0.50 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,1,1-Trichloroethane | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| Trichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,2,3-Trichloropropane | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 15:27 | 1 |
| Vinyl chloride | ND | | 0.50 | ug/L | | | 01/05/13 15:27 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 104 | | 80 - 120 | | 01/02/13 21:25 | 1 |
| 4-Bromofluorobenzene (Surr) | 103 | | 80 - 120 | | 01/05/13 15:27 | 1 |
| Dibromofluoromethane (Surr) | 84 | | 80 - 120 | | 01/02/13 21:25 | 1 |
| Toluene-d8 (Surr) | 101 | | 80 - 120 | | 01/02/13 21:25 | 1 |
| Dibromofluoromethane (Surr) | 97 | | 80 - 120 | | 01/05/13 15:27 | 1 |
| Toluene-d8 (Surr) | 104 | | 80 - 120 | | 01/05/13 15:27 | 1 |

### Method: 8270C - Semivolatile Organic Compounds (GC/MS)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Acenaphthylene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Aniline | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Anthracene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzidine | ND | * | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzo[a]anthracene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzo[a]pyrene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzo[b]fluoranthene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzo[g,h,i]perylene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzoic acid | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzo[k]fluoranthene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Benzyl alcohol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Bis(2-chloroethoxy)methane | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Bis(2-chloroethyl)ether | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| bis (2-chloroisopropyl) ether | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Bis(2-ethylhexyl) phthalate | ND | | 47 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Bromophenyl phenyl ether | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Butyl benzyl phthalate | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Carbazole | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Chloroaniline | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Chloro-3-methylphenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Chloronaphthalene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Chlorophenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Chlorophenyl phenyl ether | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Chrysene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Dibenz(a,h)anthracene | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |

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**Date Received: 12/26/12 16:00**

**Lab Sample ID: 440-33540-1**
**Matrix: Water**

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**Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)**

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Dibenzofuran | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 1,2-Dichlorobenzene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 1,3-Dichlorobenzene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 1,4-Dichlorobenzene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 3,3'-Dichlorobenzidine | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4-Dichlorophenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Diethyl phthalate | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4-Dimethylphenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Dimethyl phthalate | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Di-n-butyl phthalate | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4,6-Dinitro-2-methylphenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4-Dinitrophenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4-Dinitrotoluene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,6-Dinitrotoluene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Di-n-octyl phthalate | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 1,2-Diphenylhydrazine(as Azobenzene) | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Fluoranthene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Fluorene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Hexachlorobenzene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Hexachlorobutadiene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Hexachlorocyclopentadiene | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Hexachloroethane | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Isophorone | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Methylnaphthalene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Methylphenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 3-Methylphenol + 4-Methylphenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Naphthalene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Nitroaniline | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 3-Nitroaniline | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Nitroaniline | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Nitrobenzene | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2-Nitrophenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 4-Nitrophenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| N-Nitrosodimethylamine | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| N-Nitrosodi-n-propylamine | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| N-Nitrosodiphenylamine | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Pentachlorophenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Phenanthrene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Phenol | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Pyrene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 9.5 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4,5-Trichlorophenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4,6-Trichlorophenol | ND | | 19 | ug/L | | 12/28/12 16:39 | 01/04/13 15:49 | 1 |

| *Surrogate* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl* | 80 | | 36 - 120 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| *2-Fluorophenol (Surr)* | 65 | | 30 - 120 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| *Nitrobenzene-d5 (Surr)* | 74 | | 43 - 120 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |

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**Lab Sample ID: 440-33540-1**
Matrix: Water

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### Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| Phenol-d6 (Surr) | 71 | | 35 - 120 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| Terphenyl-d14 (Surr) | 69 | | 30 - 129 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |
| 2,4,6-Tribromophenol (Surr) | 89 | | 40 - 120 | 12/28/12 16:39 | 01/04/13 15:49 | 1 |

### Method: 8081A - Organochlorine Pesticides (GC)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| 4,4'-DDE | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| 4,4'-DDT | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Aldrin | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| alpha-BHC | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| beta-BHC | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Chlordane (technical) | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| delta-BHC | ND | | 0.19 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Dieldrin | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endosulfan I | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endosulfan II | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endosulfan sulfate | ND | | 0.19 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endrin | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endrin aldehyde | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Endrin ketone | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| gamma-BHC (Lindane) | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Heptachlor | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Heptachlor epoxide | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Methoxychlor | ND | | 0.094 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| Toxaphene | ND | | 4.7 | ug/L | | 12/27/12 06:44 | 12/28/12 00:15 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 71 | | 35 - 115 | 12/27/12 06:44 | 12/28/12 00:15 | 1 |
| DCB Decachlorobiphenyl (Surr) | 88 | | 40 - 120 | 12/27/12 06:44 | 12/28/12 00:15 | 1 |

### Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1221 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1232 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1242 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1248 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1254 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |
| Aroclor 1260 | ND | | 0.94 | ug/L | | 12/27/12 06:44 | 12/29/12 17:07 | 1 |

| Surrogate | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| DCB Decachlorobiphenyl (Surr) | 107 | | 45 - 120 | 12/27/12 06:44 | 12/29/12 17:07 | 1 |

### Method: 300.0 - Anions, Ion Chromatography

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Bromide | 0.69 | | 0.58 | mg/L | | | 12/26/12 17:11 | 1 |
| Nitrate as N | 0.66 | | 0.11 | mg/L | | | 12/26/12 17:11 | 1 |
| Fluoride | ND | | 0.50 | mg/L | | | 12/26/12 17:11 | 1 |
| Nitrate Nitrite as N | 0.66 | | 0.26 | mg/L | | | 12/26/12 17:11 | 1 |

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## Lab Sample ID: 440-33540-1

Matrix: Water

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### Method: 300.0 - Anions, Ion Chromatography (Continued)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Nitrite as N | ND | | 0.15 | mg/L | | | 12/26/12 17:11 | 1 |
| Sulfate | 86 | | 5.0 | mg/L | | | 12/26/12 17:24 | 10 |

### Method: 7199 - Chromium, Hexavalent (IC)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Chromium, Hexavalent | ND | | 2.0 | ug/L | | | 12/26/12 16:46 | 1 |

### Method: 8290 - Dioxins and Furans (HRGC/HRMS)

| Analyte | Result | Qualifier | RL | EDL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| 2,3,7,8-TCDD | ND | | 11 | | pg/L | | 01/09/13 09:58 | 01/16/13 10:58 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C-2,3,7,8-TCDD | 97 | | 40 - 135 | 01/09/13 09:58 | 01/16/13 10:58 | 1 |

### Method: 1631E - Mercury, Low Level (CVAFS)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Mercury | 0.97 | | 0.50 | ng/L | | 01/02/13 13:53 | 01/04/13 12:27 | 1 |

### Method: 6010B - Metals (ICP) - Total Recoverable

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | | 0.050 | mg/L | | 01/03/13 08:59 | 01/09/13 16:41 | 1 |
| Sulfur | 33 | | 0.60 | mg/L | | 01/16/13 07:41 | 01/21/13 17:34 | 1 |
| Boron | 0.81 | | 0.050 | mg/L | | 01/03/13 08:59 | 01/03/13 16:41 | 1 |
| Iron | 0.16 | | 0.040 | mg/L | | 01/03/13 08:59 | 01/03/13 16:41 | 1 |
| Magnesium | 4.1 | | 0.020 | mg/L | | 01/03/13 08:59 | 01/03/13 16:41 | 1 |
| Manganese | ND | | 0.020 | mg/L | | 01/03/13 08:59 | 01/03/13 16:41 | 1 |

### Method: 6020 - Metals (ICP/MS) - Total Recoverable

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Arsenic | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Barium | 25 | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Beryllium | ND | | 0.50 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Cadmium | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Chromium | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Cobalt | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Copper | 2.6 | | 2.0 | ug/L | | 01/07/13 14:35 | 01/08/13 13:37 | 1 |
| Lead | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Molybdenum | 11 | | 2.0 | ug/L | | 01/07/13 14:35 | 01/08/13 13:37 | 1 |
| Nickel | 4.1 | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Selenium | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Silver | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Thallium | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Vanadium | 83 | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:12 | 1 |
| Zinc | 140 | | 20 | ug/L | | 01/07/13 14:35 | 01/08/13 13:37 | 1 |

### General Chemistry

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | ND | | 4.8 | mg/L | | 01/07/13 10:17 | 01/07/13 13:37 | 1 |
| Total Kjeldahl Nitrogen | ND | | 0.50 | mg/L | | 01/02/13 09:25 | 01/02/13 12:43 | 1 |
| Phosphorus, Total | 0.063 | | 0.050 | mg/L | | 01/04/13 10:47 | 01/04/13 12:17 | 1 |
| Cyanide, Total | ND | | 0.025 | mg/L | | 01/07/13 15:09 | 01/07/13 18:44 | 1 |

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**Lab Sample ID: 440-33540-1**
**Matrix: Water**

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## General Chemistry (Continued)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Nitrogen, Organic | ND | | 1.0 | mg/L | | | 01/04/13 13:30 | 1 |
| Color | 63 | | 5.0 | Color Units | | | 12/27/12 10:05 | 5 |
| Turbidity | 43 | | 0.20 | NTU | | | 12/27/12 08:32 | 2 |
| Specific Conductance | 640 | | 1.0 | umhos/cm | | | 12/28/12 09:27 | 1 |
| Salinity | ND | | 3.0 | psu | | | 01/02/13 16:44 | 1 |
| Total Suspended Solids | 10 | | 10 | mg/L | | | 12/27/12 10:55 | 1 |
| Settleable Solids | ND | | 0.10 | mL/L/Hr | | | 12/27/12 08:00 | 1 |
| pH | 8.74 | HF | 0.100 | SU | | | 12/28/12 10:32 | 1 |
| Ammonia (as N) | ND | | 1.0 | mg/L | | 12/27/12 04:30 | 12/27/12 09:40 | 1 |
| Oxygen, Dissolved | 9.3 | HF | 1.0 | mg/L | | | 12/27/12 11:02 | 1 |
| Total Sulfide | ND | | 0.10 | mg/L | | | 12/27/12 15:40 | 1 |
| Chemical Oxygen Demand | ND | | 30 | mg/L | | | 01/04/13 13:08 | 1 |
| Total Organic Carbon | 6.2 | | 1.0 | mg/L | | | 12/27/12 10:09 | 1 |
| Methylene Blue Active Substances | 0.12 | | 0.10 | mg/L | | | 12/28/12 18:50 | 1 |
| Biochemical Oxygen Demand | ND | | 2.0 | mg/L | | | 12/27/12 09:55 | 1 |

## Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

| Analyte | Result | Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Coliform, Fecal | ND | | 2.0 | MPN/100mL | | | 12/28/12 16:02 | 1 |

# Lab Chronicle

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

**Client Sample ID: RW-12-26-12**
Date Collected: 12/26/12 11:55
Date Received: 12/28/12 15:00

**Lab Sample ID: 440-33540-1**
Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 8260B | | 1 | 10 mL | 10 mL | 75875 | 01/02/13 21:25 | YK | TAL IRV |
| Total/NA | Analysis | 8260B | | 1 | 10 mL | 10 mL | 77211 | 01/05/13 16:27 | AT | TAL IRV |
| Total/NA | Prep | 3520C | | | 1055 mL | 2 mL | 76156 | 12/28/12 16:38 | AG | TAL IRV |
| Total/NA | Analysis | 8270C | | 1 | | | 77077 | 01/04/13 15:49 | AI | TAL IRV |
| Total/NA | Prep | 3510C | | | 1000 mL | 2 mL | 75868 | 12/27/12 08:44 | AG | TAL IRV |
| Total/NA | Analysis | 8081A | | 1 | | | 75884 | 12/28/12 00:15 | JM | TAL IRV |
| Total/NA | Analysis | 8082 | | 1 | | | 76222 | 12/29/12 17:07 | JM | TAL IRV |
| Total/NA | Analysis | 300.0 | | 1 | 1 mL | | 75474 | 12/26/12 17:11 | NN | TAL IRV |
| Total/NA | Analysis | 300.0 | | 1 | 1 mL | | 75475 | 12/26/12 17:11 | NN | TAL IRV |
| Total/NA | Analysis | 300.0 | | 10 | 1 mL | | 75475 | 12/26/12 17:24 | NN | TAL IRV |
| Total/NA | Analysis | 7199 | | 1 | 10 in | | 76529 | 12/26/12 19:46 | CPD | TAL IRV |
| Total/NA | Prep | 8290 | | | 945 mL | 20 uL | 8436 | 01/09/13 09:59 | WS | TAL WSC |
| Total/NA | Analysis | 8290 | | 1 | | | 8759 | 01/19/13 10:59 | MC | TAL WSC |
| Total/NA | Prep | 1631E | | | 40 mL | 40 mL | 70865 | 01/02/13 13:53 | AS | TAL NC |
| Total/NA | Analysis | 1631E | | 1 | | | 71351 | 01/04/13 12:27 | AS | TAL NC |
| Total Recoverable | Prep | 3005A | | | 50 mL | 50 mL | 76759 | 01/03/13 08:59 | DT | TAL IRV |
| Total Recoverable | Analysis | 6010B | | 1 | | | 76958 | 01/03/13 16:41 | VS | TAL IRV |
| Total Recoverable | Prep | 3005A | | | 50 mL | 50 mL | 76794 | 01/03/13 10:08 | DT | TAL IRV |
| Total Recoverable | Analysis | 6020 | | 1 | | | 77468 | 01/07/13 14:12 | YS | TAL IRV |
| Total Recoverable | Prep | 3005A | | | 50 mL | 50 mL | 77432 | 01/07/13 14:35 | ND | TAL IRV |
| Total Recoverable | Analysis | 6020 | | 1 | | | 77673 | 01/08/13 13:37 | YS | TAL IRV |
| Total Recoverable | Analysis | 6020 | | 1 | | | 77721 | 01/08/13 18:33 | YS | TAL IRV |
| Total Recoverable | Prep | 3005A | | | 50 mL | 50 mL | 51855 | 01/18/13 07:41 | SR | TAL NSH |
| Total Recoverable | Analysis | 6010B | | 1 | | | 52567 | 01/21/13 17:04 | KJ | TAL NSH |
| Total/NA | Analysis | SM 5540C | | 1 | 100 mL | 100 mL | 75630 | 12/26/12 18:50 | SP | TAL IRV |
| Total/NA | Prep | SM 4500 NH3 B | | | 50 mL | 100 mL | 75864 | 12/27/12 04:30 | | TAL IRV |
| Total/NA | Analysis | SM 4500 NH3 D | | 1 | | | 75880 | 12/27/12 06:40 | | TAL IRV |
| Total/NA | Analysis | SM 2540F | | 1 | 1070 mL | 1070 mL | 75892 | 12/27/12 08:00 | TM | TAL IRV |
| Total/NA | Analysis | SM 2120B | | 3 | 50 mL | 50 mL | 75893 | 12/27/12 10:05 | TM | TAL IRV |
| Total/NA | Analysis | SM 2130B | | 2 | | 20 mL | 75894 | 12/27/12 08:32 | TM | TAL IRV |
| Total/NA | Analysis | SM5210B | | 1 | | 300 mL | 75764 | 12/27/12 09:59 | TAI | TAL IRV |
| Total/NA | Analysis | SM 4500 C G | | 1 | | 40 mL | 75775 | 12/27/12 11:02 | TAI | TAL IRV |
| Total/NA | Analysis | SM 4500 S2 D | | 1 | 7.5 mL | 7.5 mL | 75895 | 12/27/12 15:49 | NC | TAL IRV |
| Total/NA | Analysis | SM 2540D | | 1 | 100 mL | 100 mL | 75922 | 12/27/12 19:56 | DK | TAL IRV |
| Total/NA | Analysis | SM 5310B | | 1 | | 100 mL | 75938 | 12/27/12 19:05 | | TAL IRV |
| Total/NA | Analysis | SM 4500 H+ B | | 1 | | 50 mL | 75994 | 12/28/12 10:22 | TM | TAL IRV |
| Total/NA | Analysis | SM 2510B | | 1 | | | 76014 | 12/28/12 09:27 | XL | TAL IRV |
| Total/NA | Prep | 351.2 | | | 25 mL | 25 mL | 76543 | 01/02/13 09:25 | DC | TAL IRV |
| Total/NA | Analysis | 351.2 | | 1 | | | 76617 | 01/02/13 12:43 | DC | TAL IRV |
| Total/NA | Analysis | SM 2320B | | 1 | | | 76882 | 01/03/13 16:44 | XL | TAL IRV |
| Total/NA | Prep | 365.2/365.3/365 | | | 50 mL | 50 mL | 77067 | 01/04/13 10:47 | KYP | TAL IRV |

TestAmerica Irvine

# Lab Chronicle

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Client Sample ID: RW-12-26-12

Date Collected: 12/26/12 11:55
Date Received: 12/26/12 15:00

## Lab Sample ID: 440-33540-1

Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | 350.3 | | 1 | | | 77098 | 01/04/13 12:17 | KYP | TAL IRV |
| Total/NA | Analysis | SM 5220D | | 1 | 2.5 mL | 2.5 mL | 77105 | 01/04/13 13:05 | KYP | TAL IRV |
| Total/NA | Analysis | Nitrogen,Org | | 1 | | | 77116 | 01/04/13 13:30 | TN | TAL IRV |
| Total/NA | Prep | 1664A | | | 1000 mL | 1000 mL | 77360 | 01/07/13 10:17 | DA | TAL IRV |
| Total/NA | Analysis | 1664A | | 1 | | | 77363 | 01/07/13 12:37 | DA | TAL IRV |
| Total/NA | Prep | 3010B | | | 50 mL | 50 mL | 77443 | 01/07/13 15:09 | BT | TAL IRV |
| Total/NA | Analysis | 3014 | | 1 | | | 77495 | 01/07/13 18:44 | BT | TAL IRV |
| Total/NA | Analysis | SM 9221E | | 1 | 100 mL | 100 mL | 75604 | | SK | TAL IRV |
| | | | | | | | (Start) | 12/26/12 16:02 | | |
| | | | | | | | (End) | 12/28/12 13:28 | | |

**Laboratory References:**

EMS Labs = EMS Laboratories Pasadena, CA, 117 West Bellevue Drive, Ste 3, Pasadena, CA 91105-2503

SC0127 = Aquatic Testing Laboratories, 4350 Transport #107, Ventura, CA 93003

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

TAL NC = TestAmerica Canton, 4101 Shuffel Street NW, North Canton, OH 44720, TEL (330)497-9396

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

TAL WSC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

# QC Sample Results

Client: BP Wilmington Caloiner
Project/Site: BP Wilmington Caloiner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8260B - Volatile Organic Compounds (GC/MS)

**Lab Sample ID: MB 440-76675/4**
**Matrix: Water**
**Analysis Batch: 76675**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Acrolein | ND | | 5.0 | ug/L | | | 01/02/13 20:28 | 1 |
| Acrylonitrile | ND | | 2.0 | ug/L | | | 01/02/13 20:28 | 1 |
| 2-Chloroethyl vinyl ether | ND | | 2.0 | ug/L | | | 01/02/13 20:28 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 103 | | 80 - 120 | | 01/02/13 20:28 | 1 |
| Dibromofluoromethane (Surr) | 93 | | 80 - 120 | | 01/02/13 20:28 | 1 |
| Toluene-d8 (Surr) | 105 | | 80 - 120 | | 01/02/13 20:28 | 1 |

**Lab Sample ID: LCS 440-76675/5**
**Matrix: Water**
**Analysis Batch: 76675**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| 2-Chloroethyl vinyl ether | 25.0 | 23.9 | | ug/L | | 95 | 25 - 170 |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 98 | | 80 - 120 |
| Dibromofluoromethane (Surr) | 96 | | 80 - 120 |
| Toluene-d8 (Surr) | 104 | | 80 - 120 |

**Lab Sample ID: 320-1361-A-6 MS**
**Matrix: Water**
**Analysis Batch: 76675**

**Client Sample ID: Matrix Spike**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| 2-Chloroethyl vinyl ether | ND | | 50.0 | ND | F | ug/L | | 0 | 25 - 170 |

| Surrogate | MS %Recovery | MS Qualifier | Limits |
|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 103 | | 80 - 120 |
| Dibromofluoromethane (Surr) | 100 | | 80 - 120 |
| Toluene-d8 (Surr) | 102 | | 80 - 120 |

**Lab Sample ID: 320-1361-A-6 MSD**
**Matrix: Water**
**Analysis Batch: 76675**

**Client Sample ID: Matrix Spike Duplicate**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Chloroethyl vinyl ether | ND | | 50.0 | ND | F | ug/L | | 0 | 25 - 170 | NC | 25 |

| Surrogate | MSD %Recovery | MSD Qualifier | Limits |
|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 99 | | 80 - 120 |
| Dibromofluoromethane (Surr) | 99 | | 80 - 120 |
| Toluene-d8 (Surr) | 104 | | 80 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 440-77211/5**
**Matrix: Water**
**Analysis Batch: 77211**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| Bromobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Bromochloromethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Bromodichloromethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Bromoform | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Bromomethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Carbon tetrachloride | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| Chlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Chloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Chloroform | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Chloromethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 2-Chlorotoluene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 4-Chlorotoluene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| cis-1,2-Dichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| cis-1,3-Dichloropropene | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| Dibromochloromethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2-Dibromoethane (EDB) | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Dibromomethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2-Dichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,3-Dichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,4-Dichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Dichlorodifluoromethane | ND | | 5.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1-Dichloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2-Dichloroethane | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1-Dichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2-Dichloropropane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,3-Dichloropropane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 2,2-Dichloropropane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1-Dichloropropene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Ethylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Hexachlorobutadiene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Isopropylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Methylene Chloride | ND | | 5.0 | ug/L | | | 01/05/13 10:31 | 1 |
| m,p-Xylene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Naphthalene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| n-Butylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| N-Propylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| o-Xylene | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| p-Isopropyltoluene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| sec-Butylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Styrene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| tert-Butylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Tetrachloroethene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Toluene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| trans-1,2-Dichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: MB 440-77211/5**
**Matrix: Water**
**Analysis Batch: 77211**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| trans-1,3-Dichloropropene | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1,1-Trichloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,1,2-Trichloroethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Trichloroethene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Trichlorofluoromethane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2,3-Trichloropropane | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 | ug/L | | | 01/05/13 10:31 | 1 |
| Vinyl chloride | ND | | 0.50 | ug/L | | | 01/05/13 10:31 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 103 | | 80 - 120 | | 01/05/13 10:31 | 1 |
| Dibromofluoromethane (Surr) | 94 | | 80 - 120 | | 01/05/13 10:31 | 1 |
| Toluene-d8 (Surr) | 105 | | 80 - 120 | | 01/05/13 10:31 | 1 |

**Lab Sample ID: LCS 440-77211/6**
**Matrix: Water**
**Analysis Batch: 77211**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Benzene | 25.0 | 22.7 | | ug/L | | 91 | 70 - 120 |
| Bromobenzene | 25.0 | 25.0 | | ug/L | | 100 | 75 - 120 |
| Bromochloromethane | 25.0 | 24.8 | | ug/L | | 99 | 70 - 130 |
| Bromodichloromethane | 25.0 | 25.5 | | ug/L | | 102 | 70 - 135 |
| Bromoform | 25.0 | 25.8 | | ug/L | | 103 | 65 - 130 |
| Bromomethane | 25.0 | 27.1 | | ug/L | | 108 | 65 - 140 |
| Carbon tetrachloride | 25.0 | 27.3 | | ug/L | | 109 | 65 - 140 |
| Chlorobenzene | 25.0 | 23.6 | | ug/L | | 94 | 75 - 120 |
| Chloroethane | 25.0 | 23.6 | | ug/L | | 94 | 60 - 140 |
| Chloroform | 25.0 | 23.5 | | ug/L | | 94 | 70 - 130 |
| Chloromethane | 25.0 | 23.1 | | ug/L | | 92 | 50 - 140 |
| 2-Chlorotoluene | 25.0 | 22.8 | | ug/L | | 91 | 70 - 125 |
| 4-Chlorotoluene | 25.0 | 23.0 | | ug/L | | 92 | 75 - 125 |
| cis-1,2-Dichloroethene | 25.0 | 24.9 | | ug/L | | 100 | 70 - 125 |
| cis-1,3-Dichloropropene | 25.0 | 27.3 | | ug/L | | 109 | 75 - 125 |
| Dibromochloromethane | 25.0 | 27.3 | | ug/L | | 109 | 70 - 140 |
| 1,2-Dibromo-3-Chloropropane | 25.0 | 23.7 | | ug/L | | 95 | 50 - 135 |
| 1,2-Dibromoethane (EDB) | 25.0 | 24.7 | | ug/L | | 99 | 75 - 125 |
| Dibromomethane | 25.0 | 24.8 | | ug/L | | 99 | 70 - 125 |
| 1,2-Dichlorobenzene | 25.0 | 25.1 | | ug/L | | 100 | 75 - 120 |
| 1,3-Dichlorobenzene | 25.0 | 24.8 | | ug/L | | 99 | 75 - 120 |
| 1,4-Dichlorobenzene | 25.0 | 24.7 | | ug/L | | 99 | 75 - 120 |
| Dichlorodifluoromethane | 25.0 | 26.5 | | ug/L | | 106 | 35 - 155 |
| 1,1-Dichloroethane | 25.0 | 22.7 | | ug/L | | 91 | 70 - 125 |
| 1,2-Dichloroethane | 25.0 | 23.2 | | ug/L | | 93 | 60 - 140 |
| 1,1-Dichloroethene | 25.0 | 23.3 | | ug/L | | 93 | 70 - 125 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continuod)

**Lab Sample ID: LCS 440-77211/6**
**Matrix: Water**
**Analysis Batch: 77211**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| 1,2-Dichloropropane | 25.0 | 22.5 | | ug/L | | 90 | 70 - 125 |
| 1,3-Dichloropropane | 25.0 | 22.8 | | ug/L | | 91 | 70 - 120 |
| 2,2-Dichloropropane | 25.0 | 29.1 | | ug/L | | 116 | 65 - 140 |
| 1,1-Dichloropropene | 25.0 | 22.6 | | ug/L | | 90 | 75 - 130 |
| Ethylbenzene | 25.0 | 23.5 | | ug/L | | 94 | 75 - 125 |
| Hexachlorobutadiene | 25.0 | 26.2 | | ug/L | | 105 | 65 - 130 |
| Isopropylbenzene | 25.0 | 24.7 | | ug/L | | 99 | 75 - 130 |
| Methylene Chloride | 25.0 | 21.8 | | ug/L | | 87 | 65 - 130 |
| m,p-Xylene | 50.0 | 47.4 | | ug/L | | 95 | 75 - 125 |
| Naphthalene | 25.0 | 24.3 | | ug/L | | 97 | 65 - 130 |
| n-Butylbenzene | 25.0 | 25.0 | | ug/L | | 100 | 70 - 130 |
| N-Propylbenzene | 25.0 | 23.1 | | ug/L | | 92 | 75 - 130 |
| o-Xylene | 25.0 | 24.1 | | ug/L | | 97 | 75 - 125 |
| p-Isopropyltoluene | 25.0 | 24.8 | | ug/L | | 99 | 75 - 125 |
| sec-Butylbenzene | 25.0 | 23.8 | | ug/L | | 95 | 70 - 125 |
| Styrene | 25.0 | 23.5 | | ug/L | | 94 | 75 - 130 |
| tert-butylbenzene | 25.0 | 24.0 | | ug/L | | 96 | 70 - 125 |
| 1,1,1,2-Tetrachloroethane | 25.0 | 26.5 | | ug/L | | 106 | 70 - 130 |
| 1,1,2,2-Tetrachloroethane | 25.0 | 22.4 | | ug/L | | 90 | 65 - 130 |
| Tetrachloroethene | 25.0 | 26.5 | | ug/L | | 106 | 70 - 125 |
| Toluene | 25.0 | 24.6 | | ug/L | | 98 | 70 - 130 |
| trans-1,2-Dichloroethene | 25.0 | 23.6 | | ug/L | | 94 | 70 - 125 |
| trans-1,3-Dichloropropene | 25.0 | 28.7 | | ug/L | | 115 | 70 - 125 |
| 1,2,3-Trichlorobenzene | 25.0 | 25.7 | | ug/L | | 103 | 65 - 125 |
| 1,2,4-Trichlorobenzene | 25.0 | 26.3 | | ug/L | | 105 | 70 - 135 |
| 1,1,1-Trichloroethane | 25.0 | 24.6 | | ug/L | | 98 | 65 - 135 |
| 1,1,2-Trichloroethane | 25.0 | 24.4 | | ug/L | | 98 | 70 - 125 |
| Trichloroethene | 25.0 | 25.1 | | ug/L | | 101 | 70 - 125 |
| Trichlorofluoromethane | 25.0 | 26.1 | | ug/L | | 104 | 65 - 145 |
| 1,2,3-Trichloropropane | 25.0 | 21.4 | | ug/L | | 85 | 60 - 130 |
| 1,2,4-Trimethylbenzene | 25.0 | 25.3 | | ug/L | | 101 | 75 - 125 |
| 1,3,5-Trimethylbenzene | 25.0 | 24.8 | | ug/L | | 99 | 75 - 125 |
| Vinyl chloride | 25.0 | 28.4 | | ug/L | | 114 | 55 - 135 |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 97 | | 80 - 120 |
| Dibromofluoromethane (Surr) | 96 | | 80 - 120 |
| Toluene-d8 (Surr) | 108 | | 80 - 120 |

**Lab Sample ID: 440-33684-A-3 MS**
**Matrix: Water**
**Analysis Batch: 77211**

**Client Sample ID: Matrix Spike**
**Prep Type: Total/NA**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 25.0 | 21.5 | | ug/L | | 86 | 65 - 125 |
| Bromobenzene | ND | | 25.0 | 24.0 | | ug/L | | 96 | 70 - 125 |
| Bromochloromethane | ND | | 25.0 | 23.5 | | ug/L | | 94 | 65 - 135 |
| Bromodichloromethane | ND | | 25.0 | 25.1 | | ug/L | | 100 | 70 - 135 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-33684-A-3 MS
Matrix: Water
Analysis Batch: 77211

Client Sample ID: Matrix Spike
Prop Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec. | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Bromoform | ND | | 25.0 | 25.4 | | ug/L | | 101 | 65 - 135 |
| Bromomethane | ND | | 25.0 | 25.8 | | ug/L | | 103 | 55 - 145 |
| Carbon tetrachloride | ND | | 25.0 | 25.6 | | ug/L | | 103 | 65 - 140 |
| Chlorobenzene | ND | | 25.0 | 23.9 | | ug/L | | 96 | 75 - 125 |
| Chloroethane | ND | | 25.0 | 21.5 | | ug/L | | 86 | 55 - 140 |
| Chloroform | ND | | 25.0 | 22.3 | | ug/L | | 89 | 65 - 135 |
| Chloromethane | ND | | 25.0 | 22.4 | | ug/L | | 90 | 45 - 145 |
| 2-Chlorotoluene | ND | | 25.0 | 22.4 | | ug/L | | 89 | 60 - 130 |
| 4-Chlorotoluene | ND | | 25.0 | 22.6 | | ug/L | | 90 | 70 - 135 |
| cis-1,2-Dichloroethene | ND | | 25.0 | 23.3 | | ug/L | | 93 | 65 - 130 |
| cis-1,3-Dichloropropene | ND | | 25.0 | 26.1 | | ug/L | | 104 | 70 - 130 |
| Dibromochloromethane | ND | | 25.0 | 25.9 | | ug/L | | 103 | 65 - 140 |
| 1,2-Dibromo-3-Chloropropane | ND | | 25.0 | 24.6 | | ug/L | | 98 | 45 - 145 |
| 1,2-Dibromoethane (EDB) | ND | | 25.0 | 24.7 | | ug/L | | 99 | 70 - 130 |
| Dibromomethane | ND | | 25.0 | 24.1 | | ug/L | | 96 | 65 - 135 |
| 1,2-Dichlorobenzene | ND | | 25.0 | 24.1 | | ug/L | | 96 | 75 - 125 |
| 1,3-Dichlorobenzene | ND | | 25.0 | 23.5 | | ug/L | | 94 | 75 - 125 |
| 1,4-Dichlorobenzene | ND | | 25.0 | 23.6 | | ug/L | | 94 | 75 - 125 |
| Dichlorodifluoromethane | ND | | 25.0 | 24.2 | | ug/L | | 97 | 35 - 155 |
| 1,1-Dichloroethane | ND | | 25.0 | 21.8 | | ug/L | | 87 | 65 - 130 |
| 1,2-Dichloroethane | ND | | 25.0 | 22.8 | | ug/L | | 91 | 60 - 140 |
| 1,1-Dichloroethene | ND | | 25.0 | 22.6 | | ug/L | | 90 | 60 - 130 |
| 1,2-Dichloropropane | ND | | 25.0 | 21.6 | | ug/L | | 86 | 65 - 130 |
| 1,3-Dichloropropane | ND | | 25.0 | 22.0 | | ug/L | | 88 | 65 - 135 |
| 2,2-Dichloropropane | ND | | 25.0 | 25.5 | | ug/L | | 102 | 60 - 145 |
| 1,1-Dichloropropene | ND | | 25.0 | 20.6 | | ug/L | | 83 | 70 - 135 |
| Ethylbenzene | ND | | 25.0 | 21.6 | | ug/L | | 86 | 65 - 130 |
| Hexachlorobutadiene | ND | | 25.0 | 27.8 | | ug/L | | 110 | 60 - 135 |
| Isopropylbenzene | ND | | 25.0 | 24.4 | | ug/L | | 98 | 70 - 135 |
| Methylene Chloride | ND | | 25.0 | 20.1 | | ug/L | | 80 | 50 - 150 |
| m,p-Xylene | ND | | 50.0 | 45.1 | | ug/L | | 90 | 65 - 130 |
| Naphthalene | ND | | 25.0 | 26.2 | | ug/L | | 105 | 50 - 140 |
| n-Butylbenzene | ND | | 25.0 | 24.5 | | ug/L | | 98 | 65 - 135 |
| N-Propylbenzene | ND | | 25.0 | 22.8 | | ug/L | | 91 | 70 - 135 |
| o-Xylene | ND | | 25.0 | 24.3 | | ug/L | | 97 | 65 - 125 |
| p-Isopropyltoluene | ND | | 25.0 | 24.0 | | ug/L | | 96 | 65 - 130 |
| sec-Butylbenzene | ND | | 25.0 | 21.5 | | ug/L | | 86 | 70 - 135 |
| Styrene | ND | | 25.0 | 18.9 | | ug/L | | 76 | 50 - 145 |
| tert-Butylbenzene | ND | | 25.0 | 23.7 | | ug/L | | 95 | 65 - 130 |
| 1,1,1,2-Tetrachloroethane | ND | | 25.0 | 25.7 | | ug/L | | 103 | 65 - 140 |
| 1,1,2,2-Tetrachloroethane | ND | | 25.0 | 22.5 | | ug/L | | 90 | 55 - 135 |
| Tetrachloroethene | ND | | 25.0 | 25.7 | | ug/L | | 103 | 65 - 130 |
| Toluene | ND | | 25.0 | 23.8 | | ug/L | | 95 | 70 - 125 |
| trans-1,2-Dichloroethene | ND | | 25.0 | 22.5 | | ug/L | | 90 | 65 - 130 |
| trans-1,3-Dichloropropene | ND | | 25.0 | 28.6 | | ug/L | | 114 | 65 - 135 |
| 1,2,3-Trichlorobenzene | ND | | 25.0 | 27.8 | | ug/L | | 111 | 60 - 135 |
| 1,2,4-Trichlorobenzene | ND | | 25.0 | 28.3 | | ug/L | | 113 | 65 - 135 |
| 1,1,1-Trichloroethane | ND | | 25.0 | 23.7 | | ug/L | | 95 | 65 - 140 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-33684-A-3 MS
Matrix: Water
Analysis Batch: 77211

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| 1,1,2-Trichloroethane | ND | | 25.0 | 23.8 | | ug/L | | 95 | 85 - 130 |
| Trichloroethene | ND | | 25.0 | 22.0 | | ug/L | | 95 | 85 - 125 |
| Trichlorofluoromethane | ND | | 25.0 | 24.3 | | ug/L | | 97 | 60 - 145 |
| 1,2,3-Trichloropropane | ND | | 25.0 | 20.8 | | ug/L | | 83 | 55 - 135 |
| 1,2,4-Trimethylbenzene | ND | | 25.0 | 24.3 | | ug/L | | 97 | 55 - 133 |
| 1,3,5-Trimethylbenzene | ND | | 25.0 | 24.1 | | ug/L | | 96 | 70 - 139 |
| Vinyl chloride | ND | | 25.0 | 26.5 | | ug/L | | 107 | 45 - 140 |

| Surrogate | MS %Recovery | MS Qualifier | Limits |
|---|---|---|---|
| 4-Bromofluorobenzene (Surr) | 103 | | 80 - 120 |
| Dibromofluoromethane (Surr) | 97 | | 80 - 120 |
| Toluene-d8 (Surr) | 107 | | 80 - 120 |

Lab Sample ID: 440-33684-A-3 MSD
Matrix: Water
Analysis Batch: 77211

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | | 25.0 | 23.4 | | ug/L | | 93 | 85 - 125 | 4 | 20 |
| Bromobenzene | ND | | 25.0 | 25.0 | | ug/L | | 102 | 70 - 125 | 7 | 20 |
| Bromochloromethane | ND | | 25.0 | 24.1 | | ug/L | | 97 | 65 - 135 | 3 | 25 |
| Bromodichloromethane | ND | | 25.0 | 24.9 | | ug/L | | 100 | 70 - 135 | 1 | 20 |
| Bromoform | ND | | 25.0 | 25.5 | | ug/L | | 102 | 55 - 135 | 1 | 25 |
| Bromomethane | ND | | 25.0 | 26.9 | | ug/L | | 108 | 55 - 145 | 4 | 25 |
| Carbon tetrachloride | ND | | 25.0 | 26.8 | | ug/L | | 107 | 65 - 140 | 4 | 25 |
| Chlorobenzene | ND | | 25.0 | 24.1 | | ug/L | | 96 | 75 - 125 | 1 | 20 |
| Chloroethane | ND | | 25.0 | 24.9 | | ug/L | | 99 | 55 - 140 | 11 | 25 |
| Chloroform | ND | | 25.0 | 23.1 | | ug/L | | 92 | 65 - 135 | 4 | 20 |
| Chloromethane | ND | | 25.0 | 22.1 | | ug/L | | 88 | 45 - 145 | 2 | 25 |
| 2-Chlorotoluene | ND | | 25.0 | 23.1 | | ug/L | | 92 | 65 - 135 | 3 | 20 |
| 4-Chlorotoluene | ND | | 25.0 | 23.1 | | ug/L | | 92 | 70 - 135 | 2 | 20 |
| cis-1,2-Dichloroethene | ND | | 25.0 | 25.1 | | ug/L | | 101 | 65 - 130 | 7 | 20 |
| cis-1,3-Dichloropropene | ND | | 25.0 | 27.4 | | ug/L | | 110 | 70 - 130 | 5 | 20 |
| Dibromochloromethane | ND | | 25.0 | 27.8 | | ug/L | | 111 | 65 - 140 | 3 | 25 |
| 1,2-Dibromo-3-Chloropropane | ND | | 25.0 | 23.1 | | ug/L | | 92 | 45 - 145 | 6 | 20 |
| 1,2-Dibromoethane (EDB) | ND | | 25.0 | 25.4 | | ug/L | | 102 | 70 - 130 | 3 | 25 |
| Dibromomethane | ND | | 25.0 | 24.7 | | ug/L | | 99 | 65 - 135 | 3 | 25 |
| 1,2-Dichlorobenzene | ND | | 25.0 | 24.8 | | ug/L | | 99 | 75 - 125 | 3 | 20 |
| 1,3-Dichlorobenzene | ND | | 25.0 | 25.0 | | ug/L | | 100 | 75 - 125 | 6 | 20 |
| 1,4-Dichlorobenzene | ND | | 25.0 | 24.7 | | ug/L | | 99 | 75 - 125 | 5 | 20 |
| Dichlorodifluoromethane | ND | | 25.0 | 24.2 | | ug/L | | 97 | 25 - 155 | 0 | 30 |
| 1,1-Dichloroethane | ND | | 25.0 | 22.4 | | ug/L | | 90 | 65 - 130 | 4 | 20 |
| 1,2-Dichloroethane | ND | | 25.0 | 22.7 | | ug/L | | 91 | 60 - 140 | 0 | 20 |
| 1,1-Dichloroethene | ND | | 25.0 | 23.1 | | ug/L | | 92 | 60 - 130 | 2 | 20 |
| 1,2-Dichloropropane | ND | | 25.0 | 22.4 | | ug/L | | 90 | 65 - 130 | 4 | 20 |
| 1,3-Dichloropropane | ND | | 25.0 | 23.1 | | ug/L | | 92 | 65 - 135 | 5 | 25 |
| 2,2-Dichloropropane | ND | | 25.0 | 27.0 | | ug/L | | 108 | 60 - 145 | 6 | 25 |
| 1,1-Dichloropropene | ND | | 25.0 | 22.7 | | ug/L | | 91 | 70 - 135 | 9 | 20 |

## Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-33684-A-3 MSD
Matrix: Water
Analysis Batch: 77211

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ethylbenzene | ND | | 25.0 | 23.0 | | ug/L | | 92 | 60 - 130 | 7 | 20 |
| Hexachlorobutadiene | ND | | 25.0 | 24.0 | | ug/L | | 98 | 60 - 135 | 12 | 30 |
| Isopropylbenzene | ND | | 25.0 | 25.5 | | ug/L | | 102 | 70 - 135 | 4 | 20 |
| Methylene Chloride | ND | | 25.0 | 21.5 | | ug/L | | 86 | 60 - 135 | 7 | 20 |
| m,p-Xylene | ND | | 50.0 | 46.0 | | ug/L | | 94 | 65 - 130 | 4 | 25 |
| Naphthalene | ND | | 25.0 | 25.0 | | ug/L | | 102 | 50 - 140 | 3 | 30 |
| n-Butylbenzene | ND | | 25.0 | 24.4 | | ug/L | | 98 | 65 - 135 | 0 | 20 |
| N-Propylbenzene | ND | | 25.0 | 23.9 | | ug/L | | 96 | 70 - 135 | 5 | 20 |
| o-Xylene | ND | | 25.0 | 24.2 | | ug/L | | 97 | 65 - 125 | 0 | 20 |
| p-Isopropyltoluene | ND | | 25.0 | 24.8 | | ug/L | | 99 | 65 - 130 | 4 | 20 |
| sec-Butylbenzene | ND | | 25.0 | 24.1 | | ug/L | | 96 | 70 - 125 | 11 | 20 |
| Styrene | ND | | 25.0 | 16.7 | | ug/L | | 67 | 50 - 145 | 12 | 30 |
| tert-Butylbenzene | ND | | 25.0 | 24.5 | | ug/L | | 98 | 65 - 130 | 3 | 20 |
| 1,1,1,2-Tetrachloroethane | ND | | 25.0 | 26.3 | | ug/L | | 106 | 65 - 140 | 3 | 20 |
| 1,1,2,2-Tetrachloroethane | ND | | 25.0 | 23.8 | | ug/L | | 95 | 55 - 135 | 6 | 30 |
| Tetrachloroethene | ND | | 25.0 | 26.4 | | ug/L | | 105 | 65 - 130 | 3 | 20 |
| Toluene | ND | | 25.0 | 24.0 | | ug/L | | 96 | 70 - 125 | 3 | 20 |
| trans-1,2-Dichloroethene | ND | | 25.0 | 23.9 | | ug/L | | 96 | 65 - 130 | 6 | 20 |
| trans-1,3-Dichloropropene | ND | | 25.0 | 28.5 | | ug/L | | 114 | 65 - 135 | 0 | 25 |
| 1,2,3-Trichlorobenzene | ND | | 25.0 | 24.3 | | ug/L | | 97 | 60 - 135 | 14 | 20 |
| 1,2,4-Trichlorobenzene | ND | | 25.0 | 27.9 | | ug/L | | 111 | 65 - 135 | 2 | 20 |
| 1,1,1-Trichloroethane | ND | | 25.0 | 25.2 | | ug/L | | 101 | 60 - 140 | 6 | 20 |
| 1,1,2-Trichloroethane | ND | | 25.0 | 24.5 | | ug/L | | 98 | 65 - 130 | 4 | 25 |
| Trichloroethene | ND | | 25.0 | 24.8 | | ug/L | | 99 | 65 - 125 | 5 | 20 |
| Trichlorofluoromethane | ND | | 25.0 | 25.4 | | ug/L | | 101 | 40 - 140 | 4 | 25 |
| 1,2,3-Trichloropropane | ND | | 25.0 | 21.7 | | ug/L | | 87 | 55 - 135 | 4 | 30 |
| 1,2,4-Trimethylbenzene | ND | | 25.0 | 25.2 | | ug/L | | 101 | 55 - 135 | 4 | 25 |
| 1,3,5-Trimethylbenzene | ND | | 25.0 | 25.1 | | ug/L | | 100 | 70 - 130 | 4 | 20 |
| Vinyl chloride | ND | | 25.0 | 27.7 | | ug/L | | 111 | 45 - 140 | 3 | 30 |

| *Surrogate* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *4-Bromofluorobenzene (Surr)* | *98* | | *80 - 120* |
| *Dibromofluoromethane (Surr)* | *99* | | *80 - 120* |
| *Toluene-d8 (Surr)* | *103* | | *80 - 120* |

## Method: 8270C - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-76150/1-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Acenaphthene | ND | | 10 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |
| Acenaphthylene | ND | | 10 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |
| Aniline | ND | | 10 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |
| Anthracene | ND | | 10 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |
| Benzidine | ND | | 20 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |
| Benzo[a]anthracene | ND | | 10 | ug/L | | 12/28/12 16:30 | 12/31/12 13:39 | 1 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-76150/1-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Benzo[a]pyrene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Benzo[b]fluoranthene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Benzo[g,h,i]perylene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Benzoic acid | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Benzo[k]fluoranthene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Benzyl alcohol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Bis(2-chloroethoxy)methane | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Bis(2-chloroethyl)ether | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| bis (2-chloroisopropyl) ether | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Bis(2-ethylhexyl) phthalate | ND | | 50 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Bromophenyl phenyl ether | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Butyl benzyl phthalate | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Carbazole | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Chloroaniline | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Chloro-3-methylphenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Chloronaphthalene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Chlorophenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Chlorophenyl phenyl ether | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Chrysene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Dibenz(a,h)anthracene | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Dibenzofuran | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 1,2-Dichlorobenzene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 1,3-Dichlorobenzene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 1,4-Dichlorobenzene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 3,3'-Dichlorobenzidine | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4-Dichlorophenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Diethyl phthalate | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4-Dimethylphenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Dimethyl phthalate | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Di-n-butyl phthalate | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4,6-Dinitro-2-methylphenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4-Dinitrophenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4-Dinitrotoluene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,6-Dinitrotoluene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Di-n-octyl phthalate | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 1,2-Diphenylhydrazine(as Azobenzene) | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Fluoranthene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Fluorene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Hexachlorobenzene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Hexachlorobutadiene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Hexachlorocyclopentadiene | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Hexachloroethane | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Indeno[1,2,3-cd]pyrene | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Isophorone | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Methylnaphthalene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Methylphenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 3-Methylphenol + 4-Methylphenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 440-76150/1-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Naphthalene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Nitroaniline | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 3-Nitroaniline | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Nitroaniline | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Nitrobenzene | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2-Nitrophenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 4-Nitrophenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| N-Nitrosodimethylamine | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| N-Nitrosodi-n-propylamine | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| N-Nitrosodiphenylamine | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Pentachlorophenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Phenanthrene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Phenol | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| Pyrene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 1,2,4-Trichlorobenzene | ND | | 10 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4,5-Trichlorophenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |
| 2,4,6-Trichlorophenol | ND | | 20 | ug/L | | 12/28/12 16:39 | 12/31/12 13:39 | 1 |

| *Surrogate* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *2-Fluorobiphenyl* | *70* | | *30 - 130* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |
| *2-Fluorophenol (Surr)* | *54* | | *30 - 130* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |
| *Nitrobenzene-d5 (Surr)* | *71* | | *44 - 120* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |
| *Phenol-d5 (Surr)* | *67* | | *35 - 120* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |
| *Terphenyl-d14 (Surr)* | *78* | | *50 - 125* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |
| *2,4,6-Tribromophenol (Surr)* | *68* | | *40 - 130* | *12/28/12 16:39* | *12/31/12 13:39* | *1* |

Lab Sample ID: LCS 440-76150/2-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Acenaphthene | 100 | 76.9 | | ug/L | | 77 | 63 - 125 |
| Acenaphthylene | 100 | 84.4 | | ug/L | | 84 | 60 - 120 |
| Aniline | 100 | 72.3 | | ug/L | | 72 | 35 - 120 |
| Anthracene | 100 | 83.0 | | ug/L | | 83 | 65 - 120 |
| Benzidine | 100 | 74.8 | | ug/L | | 75 | 30 - 160 |
| Benzo[a]anthracene | 100 | 78.2 | | ug/L | | 78 | 65 - 120 |
| Benzo[a]pyrene | 100 | 83.7 | | ug/L | | 84 | 55 - 130 |
| Benzo[b]fluoranthene | 100 | 99.9 | | ug/L | | 99 | 55 - 125 |
| Benzo[g,h,i]perylene | 100 | 94.7 | | ug/L | | 95 | 40 - 135 |
| Benzoic acid | 100 | 71.1 | | ug/L | | 71 | 25 - 120 |
| Benzo[k]fluoranthene | 100 | 92.3 | | ug/L | | 92 | 50 - 125 |
| Benzyl alcohol | 100 | 82.6 | | ug/L | | 83 | 50 - 120 |
| Bis(2-chloroethoxy)methane | 100 | 82.4 | | ug/L | | 82 | 55 - 120 |
| Bis(2-chloroethyl)ether | 100 | 77.9 | | ug/L | | 78 | 50 - 120 |
| bis (2-chloroisopropyl) ether | 100 | 88.3 | | ug/L | | 88 | 45 - 120 |
| Bis(2-ethylhexyl) phthalate | 100 | 72.9 | | ug/L | | 73 | 44 - 124 |
| 4-Bromophenyl phenyl other | 100 | 85.0 | | ug/L | | 85 | 60 - 120 |

TestAmerica Irvine

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 440-76150/2-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Butyl benzyl phthalate | 100 | 87.1 | | ug/L | | 87 | 55 - 130 |
| Carbazole | 100 | 84.0 | | ug/L | | 84 | 55 - 125 |
| 4-Chloroaniline | 100 | 83.4 | | ug/L | | 83 | 50 - 120 |
| 4-Chloro-3-methylphenol | 100 | 87.8 | | ug/L | | 88 | 60 - 130 |
| 2-Chloronaphthalene | 100 | 74.8 | | ug/L | | 75 | 60 - 120 |
| 2-Chlorophenol | 100 | 75.7 | | ug/L | | 76 | 45 - 120 |
| 4-Chlorophenyl phenyl ether | 100 | 66.9 | | ug/L | | 66 | 44 - 120 |
| Chrysene | 100 | 79.7 | | ug/L | | 80 | 65 - 120 |
| Dibenzo[a,h]anthracene | 100 | 88.3 | | ug/L | | 88 | 50 - 135 |
| Dibenzofuran | 100 | 79.6 | | ug/L | | 80 | 65 - 120 |
| 1,2-Dichlorobenzene | 100 | 62.2 | | ug/L | | 62 | 40 - 120 |
| 1,3-Dichlorobenzene | 100 | 59.2 | | ug/L | | 59 | 35 - 120 |
| 1,4-Dichlorobenzene | 100 | 61.4 | | ug/L | | 61 | 35 - 120 |
| 3,3'-Dichlorobenzidine | 100 | 68.7 | | ug/L | | 69 | 45 - 135 |
| 2,4-Dichlorophenol | 100 | 80.6 | | ug/L | | 81 | 55 - 120 |
| Diethyl phthalate | 100 | 89.7 | | ug/L | | 90 | 55 - 120 |
| 2,4-Dimethylphenol | 100 | 77.3 | | ug/L | | 77 | 40 - 120 |
| Dimethyl phthalate | 100 | 87.0 | | ug/L | | 87 | 30 - 120 |
| Di-n-butyl phthalate | 100 | 85.3 | | ug/L | | 85 | 60 - 125 |
| 4,6-Dinitro-2-methylphenol | 100 | 81.4 | | ug/L | | 81 | 45 - 120 |
| 2,4-Dinitrophenol | 100 | 72.9 | | ug/L | | 73 | 40 - 120 |
| 2,4-Dinitrotoluene | 100 | 84.1 | | ug/L | | 84 | 65 - 120 |
| 2,6-Dinitrotoluene | 100 | 85.3 | | ug/L | | 85 | 65 - 120 |
| Di-n-octyl phthalate | 100 | 95.0 | | ug/L | | 95 | 65 - 135 |
| 1,2-Diphenylhydrazine(as Azobenzene) | 100 | 85.1 | | ug/L | | 85 | 60 - 120 |
| Fluoranthene | 100 | 84.2 | | ug/L | | 84 | 60 - 120 |
| Fluorene | 100 | 78.5 | | ug/L | | 79 | 65 - 120 |
| Hexachlorobenzene | 100 | 87.4 | | ug/L | | 87 | 60 - 120 |
| Hexachlorobutadiene | 100 | 61.0 | | ug/L | | 61 | 40 - 120 |
| Hexachlorocyclopentadiene | 100 | 52.9 | | ug/L | | 53 | 25 - 120 |
| Hexachloroethane | 100 | 53.1 | | ug/L | | 53 | 35 - 120 |
| Indeno[1,2,3-cd]pyrene | 100 | 86.2 | | ug/L | | 86 | 45 - 135 |
| Isophorone | 100 | 90.2 | | ug/L | | 90 | 50 - 120 |
| 2-Methylnaphthalene | 100 | 77.8 | | ug/L | | 78 | 55 - 120 |
| 2-Methylphenol | 100 | 75.4 | | ug/L | | 75 | 50 - 120 |
| 3-Methylphenol + 4-Methylphenol | 100 | 84.0 | | ug/L | | 84 | 50 - 120 |
| Naphthalene | 100 | 72.8 | | ug/L | | 73 | 55 - 120 |
| 2-Nitroaniline | 100 | 90.2 | | ug/L | | 90 | 65 - 120 |
| 3-Nitroaniline | 100 | 89.4 | | ug/L | | 89 | 50 - 120 |
| 4-Nitroaniline | 100 | 83.3 | | ug/L | | 83 | 55 - 125 |
| Nitrobenzene | 100 | 80.4 | | ug/L | | 80 | 55 - 120 |
| 2-Nitrophenol | 100 | 81.5 | | ug/L | | 81 | 50 - 120 |
| 4-Nitrophenol | 100 | 77.4 | | ug/L | | 77 | 45 - 120 |
| N-Nitrosodimethylamine | 100 | 78.2 | | ug/L | | 78 | 45 - 120 |
| N-Nitrosodi-n-propylamine | 100 | 93.3 | | ug/L | | 93 | 45 - 120 |
| N-Nitrosodiphenylamine | 100 | 87.2 | | ug/L | | 87 | 60 - 120 |
| Pentachlorophenol | 100 | 70.4 | | ug/L | | 70 | 24 - 121 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

**Lab Sample ID: LCS 440-76150/2-A**
**Matrix: Water**
**Analysis Batch: 76376**

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Phenanthrene | 100 | 83.0 | | ug/L | | 83 | 65 - 120 |
| Phenol | 100 | 71.5 | | ug/L | | 72 | 40 - 120 |
| Pyrene | 100 | 88.8 | | ug/L | | 89 | 55 - 125 |
| 1,2,4-Trichlorobenzene | 100 | 67.7 | | ug/L | | 68 | 45 - 120 |
| 2,4,5-Trichlorophenol | 100 | 83.8 | | ug/L | | 84 | 55 - 120 |
| 2,4,6-Trichlorophenol | 100 | 72.9 | | ug/L | | 73 | 55 - 120 |

| *Surrogate* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *2-Fluorobiphenyl* | 80 | | *30 - 120* |
| *2-Fluorophenol (Surr)* | 64 | | *30 - 120* |
| *Nitrobenzene-d5 (Surr)* | 82 | | *45 - 120* |
| *Phenol-d5 (Surr)* | 74 | | *35 - 120* |
| *Terphenyl-d14 (Surr)* | 85 | | *50 - 125* |
| *2,4,6-Tribromophenol (Surr)* | 81 | | *40 - 120* |

**Lab Sample ID: LCSD 440-76150/3-A**
**Matrix: Water**
**Analysis Batch: 76376**

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76150

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec. | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 100 | 80.8 | | ug/L | | 81 | 60 - 120 | 5 | 20 |
| Acenaphthylene | 100 | 87.4 | | ug/L | | 87 | 60 - 120 | 4 | 20 |
| Aniline | 100 | 74.4 | | ug/L | | 74 | 35 - 120 | 3 | 30 |
| Anthracene | 100 | 90.9 | | ug/L | | 91 | 65 - 120 | 9 | 20 |
| Benzidine | 100 | 38.3 | * | ug/L | | 38 | 30 - 180 | 65 | 35 |
| Benzo[a]anthracene | 100 | 87.3 | | ug/L | | 87 | 65 - 120 | 11 | 20 |
| Benzo[a]pyrene | 100 | 92.1 | | ug/L | | 92 | 55 - 130 | 10 | 25 |
| Benzo[b]fluoranthene | 100 | 97.0 | | ug/L | | 98 | 55 - 125 | 6 | 25 |
| Benzo[g,h,i]perylene | 100 | 109 | | ug/L | | 109 | 45 - 135 | 14 | 25 |
| Benzoic acid | 100 | 74.5 | | ug/L | | 75 | 25 - 120 | 5 | 35 |
| Benzo[k]fluoranthene | 100 | 101 | | ug/L | | 101 | 50 - 125 | 9 | 20 |
| Benzyl alcohol | 100 | 87.7 | | ug/L | | 88 | 50 - 120 | 6 | 20 |
| Bis(2-chloroethoxy)methane | 100 | 82.8 | | ug/L | | 83 | 55 - 120 | 9 | 20 |
| bis(2-chloroethyl)ether | 100 | 81.1 | | ug/L | | 81 | 50 - 120 | 4 | 20 |
| bis (2-chloroisopropyl) ether | 100 | 95.8 | | ug/L | | 96 | 45 - 120 | 2 | 20 |
| Bis(2-ethylhexyl) phthalate | 100 | 82.7 | | ug/L | | 83 | 44 - 124 | 13 | 28 |
| 4-Bromophenyl phenyl ether | 100 | 95.5 | | ug/L | | 96 | 60 - 120 | 12 | 25 |
| Butyl benzyl phthalate | 100 | 99.8 | | ug/L | | 100 | 55 - 130 | 14 | 20 |
| Carbazole | 100 | 90.8 | | ug/L | | 91 | 55 - 125 | 8 | 20 |
| 4-Chloroaniline | 100 | 81.2 | | ug/L | | 81 | 55 - 130 | 3 | 25 |
| 4-Chloro-3-methylphenol | 100 | 88.5 | | ug/L | | 89 | 60 - 120 | 2 | 25 |
| 2-Chloronaphthalene | 100 | 79.1 | | ug/L | | 79 | 60 - 120 | 8 | 20 |
| 2-Chlorophenol | 100 | 71.3 | | ug/L | | 71 | 45 - 120 | 8 | 25 |
| 4-Chlorophenyl phenyl ether | 100 | 74.6 | | ug/L | | 75 | 44 - 120 | 12 | 23 |
| Chrysene | 100 | 93.5 | | ug/L | | 93 | 65 - 120 | 13 | 20 |
| Dibenz(a,h)anthracene | 100 | 95.4 | | ug/L | | 95 | 50 - 135 | 8 | 25 |
| Dibenzofuran | 100 | 85.6 | | ug/L | | 86 | 65 - 120 | 7 | 20 |
| 1,2-Dichlorobenzene | 100 | 59.8 | | ug/L | | 60 | 40 - 120 | 4 | 25 |

TestAmerica Irvine

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-76150/3-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Lab Control Sample Dup
Prop Type: Total/NA
Prep Batch: 76150

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| 1,3-Dichlorobenzene | 100 | 54.5 | | ug/L | | 54 | 35 - 120 | 8 | 25 |
| 1,4-Dichlorobenzene | 100 | 58.4 | | ug/L | | 58 | 35 - 120 | 5 | 25 |
| 3,3'-Dichlorobenzidine | 100 | 84.2 | | ug/L | | 84 | 45 - 135 | 7 | 35 |
| 2,4-Dichlorophenol | 100 | 79.6 | | ug/L | | 80 | 55 - 120 | 1 | 20 |
| Diethyl phthalate | 100 | 98.4 | | ug/L | | 98 | 55 - 120 | 9 | 30 |
| 2,4-Dimethylphenol | 100 | 80.8 | | ug/L | | 81 | 40 - 120 | 4 | 25 |
| Dimethyl phthalate | 100 | 92.4 | | ug/L | | 92 | 30 - 120 | 6 | 30 |
| Di-n-butyl phthalate | 100 | 95.3 | | ug/L | | 95 | 60 - 125 | 11 | 30 |
| 4,6-Dinitro-2-methylphenol | 100 | 77.0 | | ug/L | | 78 | 45 - 120 | 4 | 25 |
| 2,4-Dinitrophenol | 100 | 66.1 | | ug/L | | 66 | 40 - 120 | 10 | 25 |
| 2,4-Dinitrotoluene | 100 | 88.6 | | ug/L | | 89 | 60 - 120 | 5 | 20 |
| 2,6-Dinitrotoluene | 100 | 91.8 | | ug/L | | 92 | 65 - 120 | 6 | 20 |
| Di-n-octyl phthalate | 100 | 100 | | ug/L | | 100 | 65 - 130 | 13 | 20 |
| 1,2-Diphenylhydrazine(as Azobenzene) | 100 | 93.2 | | ug/L | | 93 | 60 - 120 | 9 | 25 |
| Fluoranthene | 100 | 92.4 | | ug/L | | 92 | 60 - 120 | 0 | 30 |
| Fluorene | 100 | 84.3 | | ug/L | | 84 | 65 - 120 | 7 | 20 |
| Hexachlorobenzene | 100 | 93.6 | | ug/L | | 94 | 60 - 120 | 7 | 20 |
| Hexachlorobutadiene | 100 | 58.7 | | ug/L | | 59 | 40 - 120 | 4 | 25 |
| Hexachlorocyclopentadiene | 100 | 48.9 | | ug/L | | 49 | 35 - 120 | 8 | 30 |
| Hexachloroethane | 100 | 50.0 | | ug/L | | 50 | 35 - 120 | 6 | 25 |
| Indeno[1,2,3-cd]pyrene | 100 | 92.2 | | ug/L | | 92 | 45 - 135 | 7 | 25 |
| Isophorone | 100 | 92.2 | | ug/L | | 92 | 50 - 120 | 2 | 20 |
| 2-Methylnaphthalene | 100 | 77.6 | | ug/L | | 78 | 55 - 120 | 0 | 30 |
| 2-Methylphenol | 100 | 77.8 | | ug/L | | 78 | 50 - 120 | 1 | 20 |
| 3-Methylphenol + 4-Methylphenol | 100 | 82.5 | | ug/L | | 82 | 50 - 120 | 2 | 20 |
| Naphthalene | 100 | 70.9 | | ug/L | | 71 | 55 - 120 | 3 | 20 |
| 2-Nitroaniline | 100 | 95.3 | | ug/L | | 95 | 65 - 120 | 5 | 20 |
| 3-Nitroaniline | 100 | 92.8 | | ug/L | | 93 | 60 - 130 | 4 | 25 |
| 4-Nitroaniline | 100 | 88.2 | | ug/L | | 88 | 55 - 125 | 6 | 30 |
| Nitrobenzene | 100 | 80.8 | | ug/L | | 81 | 55 - 120 | 1 | 25 |
| 2-Nitrophenol | 100 | 78.8 | | ug/L | | 79 | 50 - 120 | 3 | 25 |
| 4-Nitrophenol | 100 | 83.5 | | ug/L | | 84 | 45 - 120 | 8 | 30 |
| N-Nitrosodimethylamine | 100 | 73.3 | | ug/L | | 73 | 45 - 120 | 4 | 20 |
| N-Nitrosodi-n-propylamine | 100 | 94.3 | | ug/L | | 94 | 45 - 120 | 1 | 20 |
| N-Nitrosodiphenylamine | 100 | 95.0 | | ug/L | | 95 | 60 - 120 | 9 | 20 |
| Pentachlorophenol | 100 | 75.6 | | ug/L | | 76 | 34 - 121 | 7 | 25 |
| Phenanthrene | 100 | 90.3 | | ug/L | | 90 | 65 - 120 | 8 | 20 |
| Phenol | 100 | 76.3 | | ug/L | | 76 | 40 - 120 | 6 | 25 |
| Pyrene | 100 | 100 | | ug/L | | 100 | 55 - 125 | 12 | 25 |
| 1,2,4-Trichlorobenzene | 100 | 64.6 | | ug/L | | 65 | 45 - 130 | 4 | 20 |
| 2,4,5-Trichlorophenol | 100 | 88.2 | | ug/L | | 88 | 55 - 120 | 5 | 30 |
| 2,4,6-Trichlorophenol | 100 | 75.6 | | ug/L | | 76 | 55 - 120 | 4 | 30 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| 2-Fluorobiphenyl | 80 | | 50 - 120 |
| 2-Fluorophenol (Sur) | 59 | | 35 - 120 |
| Nitrobenzene-d5 (Sur) | 82 | | 45 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8270C - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 440-76150/3-A
Matrix: Water
Analysis Batch: 76376

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76150

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| Phenol-d5 (Surr) | 68 | | 35 - 120 |
| Terphenyl-d14 (Surr) | 98 | | 50 - 125 |
| 2,4,6-Tribromophenol (Surr) | 88 | | 40 - 120 |

## Method: 8081A - Organochlorine Pesticides (GC)

Lab Sample ID: MB 440-75668/1-A
Matrix: Water
Analysis Batch: 75884

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 75668

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| 4,4'-DDE | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| 4,4'-DDT | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Aldrin | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| alpha-BHC | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| beta-BHC | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Chlordane (technical) | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| delta-BHC | ND | | 0.20 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Dieldrin | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endosulfan I | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endosulfan II | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endosulfan sulfate | ND | | 0.20 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endrin | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endrin aldehyde | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Endrin ketone | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| gamma-BHC (Lindane) | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Heptachlor | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Heptachlor epoxide | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Methoxychlor | ND | | 0.10 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| Toxaphene | ND | | 5.0 | ug/L | | 12/27/12 08:44 | 12/27/12 23:19 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| Tetrachloro-m-xylene | 86 | | 35 - 115 | 12/27/12 08:44 | 12/27/12 23:19 | 1 |
| DCB Decachlorobiphenyl (Surr) | 93 | | 40 - 120 | 12/27/12 08:44 | 12/27/12 23:19 | 1 |

Lab Sample ID: LCS 440-75668/2-A
Matrix: Water
Analysis Batch: 75884

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 75668

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec Limits |
|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 0.500 | 0.520 | | ug/L | | 104 | 55 - 120 |
| 4,4'-DDE | 0.500 | 0.459 | | ug/L | | 92 | 50 - 120 |
| 4,4'-DDT | 0.500 | 0.526 | | ug/L | | 105 | 55 - 120 |
| Aldrin | 0.500 | 0.338 | | ug/L | | 68 | 40 - 115 |
| alpha-BHC | 0.500 | 0.453 | | ug/L | | 91 | 45 - 115 |
| beta-BHC | 0.500 | 0.404 | | ug/L | | 81 | 55 - 115 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33640-1
SDG: Recycle Water 2012

## Method: 8081A - Organochlorine Pesticides (GC) (Continued)

**Lab Sample ID: LCS 440-75668/2-A**
**Matrix: Water**
**Analysis Batch: 75884**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 75668**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| delta-BHC | 0.500 | 0.460 | | ug/L | | 92 | 55 - 115 |
| Dieldrin | 0.500 | 0.456 | | ug/L | | 91 | 55 - 115 |
| Endosulfan I | 0.500 | 0.405 | | ug/L | | 81 | 55 - 115 |
| Endosulfan II | 0.500 | 0.450 | | ug/L | | 90 | 55 - 120 |
| Endosulfan sulfate | 0.500 | 0.480 | | ug/L | | 96 | 60 - 120 |
| Endrin | 0.500 | 0.520 | | ug/L | | 100 | 55 - 115 |
| Endrin aldehyde | 0.500 | 0.395 | | ug/L | | 79 | 50 - 120 |
| Endrin ketone | 0.500 | 0.464 | | ug/L | | 93 | 55 - 120 |
| gamma-BHC (Lindane) | 0.500 | 0.306 | | ug/L | | 61 | 45 - 115 |
| Heptachlor | 0.500 | 0.441 | | ug/L | | 88 | 45 - 115 |
| Heptachlor epoxide | 0.500 | 0.420 | | ug/L | | 84 | 55 - 115 |
| Methoxychlor | 0.500 | 0.559 | | ug/L | | 112 | 60 - 120 |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 79 | | 35 - 115 |
| DCB Decachlorobiphenyl (Surr) | 69 | | 45 - 120 |

**Lab Sample ID: LCSD 440-75668/3-A**
**Matrix: Water**
**Analysis Batch: 75884**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 75668**

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| 4,4'-DDD | 0.500 | 0.530 | | ug/L | | 106 | 55 - 120 | 4 | 30 |
| 4,4'-DDE | 0.500 | 0.524 | | ug/L | | 105 | 50 - 120 | 13 | 30 |
| 4,4'-DDT | 0.500 | 0.547 | | ug/L | | 109 | 55 - 120 | 4 | 30 |
| Aldrin | 0.500 | 0.432 | | ug/L | | 86 | 45 - 115 | 25 | 30 |
| alpha-BHC | 0.500 | 0.468 | | ug/L | | 94 | 45 - 115 | 3 | 30 |
| beta-BHC | 0.500 | 0.429 | | ug/L | | 86 | 55 - 115 | 6 | 30 |
| delta-BHC | 0.500 | 0.483 | | ug/L | | 97 | 55 - 115 | 4 | 30 |
| Dieldrin | 0.500 | 0.485 | | ug/L | | 97 | 55 - 115 | 6 | 30 |
| Endosulfan I | 0.500 | 0.443 | | ug/L | | 89 | 55 - 115 | 9 | 30 |
| Endosulfan II | 0.500 | 0.462 | | ug/L | | 92 | 55 - 120 | 3 | 30 |
| Endosulfan sulfate | 0.500 | 0.488 | | ug/L | | 98 | 60 - 120 | 2 | 30 |
| Endrin | 0.500 | 0.551 | | ug/L | | 110 | 55 - 115 | 4 | 30 |
| Endrin aldehyde | 0.500 | 0.433 | | ug/L | | 87 | 50 - 120 | 9 | 30 |
| Endrin ketone | 0.500 | 0.471 | | ug/L | | 94 | 55 - 120 | 2 | 30 |
| gamma-BHC (Lindane) | 0.500 | 0.415 | | ug/L | | 83 | 45 - 115 | 30 | 30 |
| Heptachlor | 0.500 | 0.480 | | ug/L | | 92 | 45 - 115 | 4 | 30 |
| Heptachlor epoxide | 0.500 | 0.451 | | ug/L | | 90 | 55 - 115 | 7 | 30 |
| Methoxychlor | 0.500 | 0.560 | | ug/L | | 112 | 60 - 120 | 0 | 30 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| Tetrachloro-m-xylene | 82 | | 35 - 115 |
| DCB Decachlorobiphenyl (Surr) | 90 | | 45 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 8082 - Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Lab Sample ID: MB 440-75668/1-A
Matrix: Water
Analysis Batch: 76222

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 75668

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1221 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1232 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1242 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1248 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1254 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |
| Aroclor 1260 | ND | | 1.0 | ug/L | | 12/27/12 08:44 | 12/29/12 16:07 | 1 |

| Surrogate | MB %Recovery | MB Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| DCB Decachlorobiphenyl (Surr) | 103 | | 45 - 120 | 12/27/12 08:44 | 12/29/12 16:07 | 1 |

Lab Sample ID: LCS 440-75668/4-A
Matrix: Water
Analysis Batch: 76222

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 75668

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 4.00 | 3.09 | | ug/L | | 77 | 50 - 115 |
| Aroclor 1260 | 4.00 | 3.88 | | ug/L | | 96 | 60 - 120 |

| Surrogate | LCS %Recovery | LCS Qualifier | Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl (Surr) | 104 | | 45 - 120 |

Lab Sample ID: LCSD 440-75668/5-A
Matrix: Water
Analysis Batch: 76222

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 75668

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Aroclor 1016 | 4.00 | 3.06 | | ug/L | | 77 | 50 - 115 | 1 | 30 |
| Aroclor 1260 | 4.00 | 3.87 | | ug/L | | 99 | 60 - 120 | 4 | 25 |

| Surrogate | LCSD %Recovery | LCSD Qualifier | Limits |
|---|---|---|---|
| DCB Decachlorobiphenyl (Surr) | 102 | | 45 - 120 |

## Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 440-75474/4
Matrix: Water
Analysis Batch: 75474

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Nitrate as N | ND | | 0.11 | mg/L | | | 12/28/12 11:30 | 1 |
| Nitrate Nitrite as N | ND | | 0.26 | mg/L | | | 12/28/12 11:30 | 1 |
| Nitrite as N | ND | | 0.15 | mg/L | | | 12/28/12 11:30 | 1 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCS 440-75474/7
Matrix: Water
Analysis Batch: 75474

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Nitrate as N | 1.13 | 1.16 | | mg/L | | 103 | 90 - 110 |
| Nitrite as N | 1.62 | 1.64 | | mg/L | | 101 | 90 - 110 |

Lab Sample ID: 440-33528-A-1 MS
Matrix: Water
Analysis Batch: 75474

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Nitrate as N | ND | | 11.3 | 16.7 | F | mg/L | | 139 | 80 - 120 |
| Nitrite as N | ND | | 15.2 | 22.4 | F | mg/L | | 147 | 80 - 120 |

Lab Sample ID: 440-33528-A-1 MSD
Matrix: Water
Analysis Batch: 75474

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nitrate as N | ND | | 11.3 | 15.0 | F | mg/L | | 133 | 80 - 120 | 4 | 20 |
| Nitrite as N | ND | | 15.2 | 22.1 | F | mg/L | | 145 | 80 - 120 | 3 | 20 |

Lab Sample ID: MB 440-75475/4
Matrix: Water
Analysis Batch: 75475

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Bromide | ND | | 0.50 | mg/L | | | 12/26/12 11:30 | 1 |
| Fluoride | ND | | 0.50 | mg/L | | | 12/26/12 11:30 | 1 |
| Sulfate | ND | | 0.50 | mg/L | | | 12/26/12 11:30 | 1 |

Lab Sample ID: LCS 440-75475/7
Matrix: Water
Analysis Batch: 75475

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Bromide | 5.00 | 5.20 | | mg/L | | 104 | 90 - 110 |
| Fluoride | 5.00 | 4.50 | | mg/L | | 90 | 90 - 110 |
| Sulfate | 10.0 | 9.38 | | mg/L | | 94 | 90 - 110 |

Lab Sample ID: 440-33528-A-1 MS
Matrix: Water
Analysis Batch: 75475

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Bromide | ND | | 50.0 | 58.4 | | mg/L | | 117 | 80 - 120 |
| Fluoride | ND | | 50.0 | 50.1 | | mg/L | | 100 | 80 - 120 |
| Sulfate | 420 | | 100 | 467 | 4 | mg/L | | 51 | 80 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33340-1
SDG: Recycle Water 2012

## Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 440-33528-A-1 MSD
Matrix: Water
Analysis Batch: 75475

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bromide | ND | | 30.0 | 64.5 | F | mg/L | | 129 | 80 - 120 | 10 | 20 |
| Fluoride | ND | | 30.0 | ND | | mg/L | | 0.0 | 80 - 120 | 1 | 20 |
| Sulfate | 420 | | 100 | 464 | 4 | mg/L | | 40 | 80 - 120 | 1 | 20 |

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## Method: 7199 - Chromium, Hexavalent (IC)

Lab Sample ID: MB 440-75529/17
Matrix: Water
Analysis Batch: 75529

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Chromium, hexavalent | ND | | 2.0 | ug/L | | | 12/26/12 17:16 | 1 |

Lab Sample ID: LCS 440-75529/16
Matrix: Water
Analysis Batch: 75529

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Chromium, hexavalent | 50.0 | 50.7 | | ug/L | | 101 | 90 - 110 |

Lab Sample ID: 440-33528-D-1 MS
Matrix: Water
Analysis Batch: 75529

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Chromium, hexavalent | ND | | 50.0 | 52.0 | | ug/L | | 103 | 85 - 115 |

Lab Sample ID: 440-33528-D-1 MSD
Matrix: Water
Analysis Batch: 75529

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chromium, hexavalent | ND | | 50.0 | 52.0 | | ug/L | | 103 | 85 - 115 | 0 | 20 |

## Method: 1631E - Mercury, Low Level (CVAFS)

Lab Sample ID: MB 240-70885/1-A
Matrix: Water
Analysis Batch: 71251

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 70885

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Mercury | ND | | 0.50 | ng/L | | 01/02/13 13:53 | 01/04/13 12:12 | 1 |

Lab Sample ID: LCS 240-70885/2-A
Matrix: Water
Analysis Batch: 71251

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 70885

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Mercury | 5.00 | 4.90 | | ng/L | | 98 | 77 - 123 |

## Method: 1631E - Mercury, Low Level (CVAFS) (Continued)

Lab Sample ID: 240-19386-A-1-A MSD
Matrix: Water
Analysis Batch: 71251

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 70885

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mercury | 1.8 | | 5.00 | 5.00 | | ng/L | | 96 | 71 - 125 | 4 | 24 |

Lab Sample ID: 240-19386-A-1-A MS
Matrix: Water
Analysis Batch: 71251

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 70885

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Mercury | 1.8 | | 5.00 | 5.65 | | ng/L | | 81 | 71 - 125 |

## Method: 6010B - Metals (ICP)

Lab Sample ID: MB 490-51855/1-A
Matrix: Water
Analysis Batch: 52557

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 51855

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Sulfur | ND | | 0.50 | mg/L | | 01/18/13 07:41 | 01/21/13 17:27 | 1 |

Lab Sample ID: LCS 490-51855/2-A
Matrix: Water
Analysis Batch: 52557

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 51855

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Sulfur | 1.00 | 1.08 | | mg/L | | 108 | 80 - 120 |

Lab Sample ID: MB 440-76768/1-A
Matrix: Water
Analysis Batch: 76968

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 76768

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | | 0.050 | mg/L | | 01/03/13 08:59 | 01/03/13 16:28 | 1 |
| Boron | ND | | 0.050 | mg/L | | 01/03/13 08:59 | 01/03/13 16:28 | 1 |
| Iron | ND | | 0.040 | mg/L | | 01/03/13 08:59 | 01/03/13 16:28 | 1 |
| Magnesium | ND | | 0.020 | mg/L | | 01/03/13 08:59 | 01/03/13 16:28 | 1 |
| Manganese | ND | | 0.020 | mg/L | | 01/03/13 08:59 | 01/03/13 16:28 | 1 |

Lab Sample ID: LCS 440-76768/2-A
Matrix: Water
Analysis Batch: 76968

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 76768

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Aluminum | 1.00 | 0.885 | | mg/L | | 88 | 80 - 120 |
| Boron | 1.00 | 0.960 | | mg/L | | 97 | 80 - 120 |
| Iron | 1.00 | 0.890 | | mg/L | | 89 | 80 - 120 |
| Magnesium | 5.00 | 4.92 | | mg/L | | 98 | 80 - 120 |
| Manganese | 1.00 | 0.950 | | mg/L | | 95 | 80 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 6010B - Metals (ICP) (Continued)

Lab Sample ID: 440-33467-N-1-B MS
Matrix: Water
Analysis Batch: 76958

Client Sample ID: Matrix Spike
Prop Type: Total Recoverable
Prop Batch: 76766

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | | 1.00 | 0.835 | | mg/L | | 83 | 75 - 125 |
| Boron | 1.4 | | 1.00 | 2.34 | | mg/L | | 99 | 75 - 125 |
| Iron | 0.053 | | 1.00 | 1.09 | | mg/L | | 102 | 75 - 125 |
| Magnesium | 8.1 | | 5.00 | 12.0 | | mg/L | | 90 | 75 - 125 |
| Manganese | 0.024 | | 1.00 | 0.947 | | mg/L | | 92 | 75 - 125 |

Lab Sample ID: 440-33467-N-1-C MSD
Matrix: Water
Analysis Batch: 76958

Client Sample ID: Matrix Spike Duplicate
Prop Type: Total Recoverable
Prop Batch: 76766

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Aluminum | ND | | 1.00 | 0.863 | | mg/L | | 85 | 75 - 125 | 3 | 20 |
| Boron | 1.4 | | 1.00 | 2.36 | | mg/L | | 101 | 75 - 125 | 1 | 20 |
| Iron | 0.053 | | 1.00 | 1.13 | | mg/L | | 105 | 75 - 125 | 4 | 20 |
| Magnesium | 8.1 | | 5.00 | 12.8 | | mg/L | | 93 | 75 - 125 | 1 | 20 |
| Manganese | 0.024 | | 1.00 | 0.973 | | mg/L | | 95 | 75 - 125 | 3 | 20 |

## Method: 6020 - Metals (ICP/MS)

Lab Sample ID: MB 440-76794/1-A
Matrix: Water
Analysis Batch: 77469

Client Sample ID: Method Blank
Prop Type: Total Recoverable
Prop Batch: 76794

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Arsenic | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Barium | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Beryllium | ND | | 0.50 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Cadmium | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Chromium | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Cobalt | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Lead | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Nickel | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Selenium | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Silver | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Thallium | ND | | 1.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |
| Vanadium | ND | | 2.0 | ug/L | | 01/03/13 10:05 | 01/07/13 14:03 | 1 |

Lab Sample ID: LCS 440-76794/2-A
Matrix: Water
Analysis Batch: 77469

Client Sample ID: Lab Control Sample
Prop Type: Total Recoverable
Prop Batch: 76794

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Antimony | 80.0 | 78.2 | | ug/L | | 98 | 80 - 120 |
| Arsenic | 80.0 | 77.0 | | ug/L | | 96 | 80 - 120 |
| Barium | 80.0 | 78.3 | | ug/L | | 98 | 80 - 120 |
| Beryllium | 80.0 | 78.4 | | ug/L | | 98 | 80 - 120 |
| Cadmium | 80.0 | 77.3 | | ug/L | | 97 | 80 - 120 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 440-76794/2-A
Matrix: Water
Analysis Batch: 77469

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 76794

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Chromium | 80.0 | 77.5 | | ug/L | | 97 | 80 - 120 |
| Cobalt | 80.0 | 79.1 | | ug/L | | 99 | 80 - 120 |
| Lead | 80.0 | 76.7 | | ug/L | | 96 | 80 - 120 |
| Nickel | 80.0 | 79.3 | | ug/L | | 99 | 80 - 120 |
| Selenium | 80.0 | 74.5 | | ug/L | | 93 | 80 - 120 |
| Silver | 80.0 | 77.9 | | ug/L | | 97 | 80 - 120 |
| Thallium | 80.0 | 76.2 | | ug/L | | 96 | 80 - 120 |
| Vanadium | 80.0 | 77.8 | | ug/L | | 97 | 80 - 120 |

Lab Sample ID: 440-33540-1 MS
Matrix: Water
Analysis Batch: 77469

Client Sample ID: RW-12-26-12
Prep Type: Total Recoverable
Prep Batch: 76794

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 80.0 | 83.6 | | ug/L | | 103 | 75 - 125 |
| Arsenic | ND | | 80.0 | 80.7 | | ug/L | | 101 | 75 - 125 |
| Barium | 25 | | 80.0 | 107 | | ug/L | | 100 | 75 - 125 |
| Beryllium | ND | | 80.0 | 82.8 | | ug/L | | 104 | 75 - 125 |
| Cadmium | ND | | 80.0 | 78.8 | | ug/L | | 98 | 75 - 125 |
| Chromium | ND | | 80.0 | 79.9 | | ug/L | | 98 | 75 - 125 |
| Cobalt | ND | | 80.0 | 80.0 | | ug/L | | 100 | 75 - 125 |
| Lead | ND | | 80.0 | 76.4 | | ug/L | | 96 | 75 - 125 |
| Nickel | 4.1 | | 80.0 | 73.3 | | ug/L | | 87 | 75 - 125 |
| Selenium | ND | | 80.0 | 74.1 | | ug/L | | 92 | 75 - 125 |
| Silver | ND | | 80.0 | 79.9 | | ug/L | | 100 | 75 - 125 |
| Thallium | ND | | 80.0 | 77.7 | | ug/L | | 97 | 75 - 125 |
| Vanadium | 93 | | 80.0 | 171 | | ug/L | | 99 | 75 - 125 |

Lab Sample ID: 440-33540-1 MSD
Matrix: Water
Analysis Batch: 77469

Client Sample ID: RW-12-26-12
Prep Type: Total Recoverable
Prep Batch: 76794

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | ND | | 80.0 | 81.4 | | ug/L | | 101 | 75 - 125 | 3 | 20 |
| Arsenic | ND | | 80.0 | 79.0 | | ug/L | | 99 | 75 - 125 | 2 | 20 |
| Barium | 25 | | 80.0 | 104 | | ug/L | | 99 | 75 - 125 | 4 | 20 |
| Beryllium | ND | | 80.0 | 82.1 | | ug/L | | 103 | 75 - 125 | 1 | 20 |
| Cadmium | ND | | 80.0 | 75.5 | | ug/L | | 94 | 75 - 125 | 3 | 20 |
| Chromium | ND | | 80.0 | 76.2 | | ug/L | | 94 | 75 - 125 | 5 | 20 |
| Cobalt | ND | | 80.0 | 77.2 | | ug/L | | 96 | 75 - 125 | 4 | 20 |
| Lead | ND | | 80.0 | 73.8 | | ug/L | | 92 | 75 - 125 | 3 | 20 |
| Nickel | 4.1 | | 80.0 | 70.8 | | ug/L | | 83 | 75 - 125 | 4 | 20 |
| Selenium | ND | | 80.0 | 72.1 | | ug/L | | 89 | 75 - 125 | 3 | 20 |
| Silver | ND | | 80.0 | 76.3 | | ug/L | | 95 | 75 - 125 | 5 | 20 |
| Thallium | ND | | 80.0 | 76.1 | | ug/L | | 95 | 75 - 125 | 2 | 20 |
| Vanadium | 93 | | 80.0 | 166 | | ug/L | | 92 | 75 - 125 | 3 | 20 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 6020 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 440-77432/1-A
Matrix: Water
Analysis Batch: 77673

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 77432

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Copper | ND | | 2.0 | ug/L | | 01/07/13 14:35 | 01/08/13 12:30 | 1 |
| Molybdenum | ND | | 2.0 | ug/L | | 01/07/13 14:35 | 01/08/13 12:30 | 1 |
| Zinc | ND | | 20 | ug/L | | 01/07/13 14:35 | 01/08/13 12:30 | 1 |

Lab Sample ID: LCS 440-77432/2-A
Matrix: Water
Analysis Batch: 77673

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 77432

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Copper | 80.0 | 82.8 | | ug/L | | 103 | 80 - 120 |
| Molybdenum | 80.0 | 79.6 | | ug/L | | 100 | 80 - 120 |
| Zinc | 80.0 | 83.1 | | ug/L | | 104 | 80 - 120 |

Lab Sample ID: 440-33580-K-1-F MS
Matrix: Water
Analysis Batch: 77673

Client Sample ID: Matrix Spike
Prep Type: Total Recoverable
Prep Batch: 77432

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Copper | ND | | 80.0 | 89.3 | | ug/L | | 111 | 75 - 125 |
| Molybdenum | 15 | | 80.0 | 112 | | ug/L | | 121 | 75 - 125 |
| Zinc | ND | | 80.0 | 89.7 | | ug/L | | 112 | 75 - 125 |

Lab Sample ID: 440-33580-K-1-G MSD
Matrix: Water
Analysis Batch: 77673

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total Recoverable
Prep Batch: 77432

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Copper | ND | | 80.0 | 77.6 | | ug/L | | 96 | 75 - 125 | 15 | 20 |
| Molybdenum | 15 | | 80.0 | 98.8 | | ug/L | | 105 | 75 - 125 | 12 | 20 |
| Zinc | ND | | 80.0 | 80.0 | | ug/L | | 100 | 75 - 125 | 11 | 20 |

## Method: 1664A - HEM and SGT-HEM

Lab Sample ID: MB 440-77360/1-A
Matrix: Water
Analysis Batch: 77393

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77360

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | ND | | 5.0 | mg/L | | 01/07/13 10:17 | 01/07/13 12:37 | 1 |

Lab Sample ID: LCS 440-77360/2-A
Matrix: Water
Analysis Batch: 77393

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 77360

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 20.0 | 17.5 | | mg/L | | 90 | 78 - 114 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: 1664A - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 440-77360/3-A
Matrix: Water
Analysis Batch: 77393

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 77360

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| HEM (Oil & Grease) | 20.0 | 18.6 | | mg/L | | 93 | 78 - 114 | 4 | 11 |

## Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 440-76543/5-A
Matrix: Water
Analysis Batch: 76617

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 76543

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Total Kjeldahl Nitrogen | ND | | 0.50 | mg/L | | 01/02/13 09:25 | 01/03/13 12:11 | 1 |

Lab Sample ID: LCS 440-76543/3-A
Matrix: Water
Analysis Batch: 76617

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 76543

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Kjeldahl Nitrogen | 5.00 | 5.40 | | mg/L | | 108 | 90 - 110 |

Lab Sample ID: LCSD 440-76543/4-A
Matrix: Water
Analysis Batch: 76617

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 76543

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Total Kjeldahl Nitrogen | 5.00 | 5.43 | | mg/L | | 109 | 90 - 110 | 1 | 20 |

Lab Sample ID: 440-33889-G-1-B MS
Matrix: Water
Analysis Batch: 76617

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 76543

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Total Kjeldahl Nitrogen | ND | | 5.00 | 3.61 | F | mg/L | | 72 | 90 - 110 |

Lab Sample ID: 440-33889-G-1-C MSD
Matrix: Water
Analysis Batch: 76617

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA
Prep Batch: 76543

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Kjeldahl Nitrogen | ND | | 5.00 | 3.58 | F | mg/L | | 72 | 90 - 110 | 1 | 20 |

## Method: 365.3 - Phosphorus, Total

Lab Sample ID: MB 440-77067/1-A
Matrix: Water
Analysis Batch: 77096

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77067

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Phosphorus, Total | ND | | 0.050 | mg/L | | 01/04/13 10:47 | 01/04/13 12:17 | 1 |

## Method: 365.3 - Phosphorus, Total (Continued)

Lab Sample ID: LCS 440-77067/2-A
Matrix: Water
Analysis Batch: 77096

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 77067

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Phosphorus, Total | 0.500 | 0.520 | | mg/L | | 104 | 80 - 120 |

Lab Sample ID: 440-33540-1 MS
Matrix: Water
Analysis Batch: 77096

Client Sample ID: RW-12-26-12
Prep Type: Total/NA
Prep Batch: 77067

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Phosphorus, Total | 0.063 | | 0.500 | 0.609 | | mg/L | | 109 | 75 - 125 |

Lab Sample ID: 440-33540-1 MSD
Matrix: Water
Analysis Batch: 77096

Client Sample ID: RW-12-26-12
Prep Type: Total/NA
Prep Batch: 77067

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phosphorus, Total | 0.063 | | 0.500 | 0.593 | | mg/L | | 106 | 75 - 125 | 3 | 20 |

## Method: 9014 - Cyanide

Lab Sample ID: MB 440-77443/1-A
Matrix: Water
Analysis Batch: 77498

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 77443

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Cyanide, Total | ND | | 0.025 | mg/L | | 01/07/13 15:09 | 01/07/13 16:44 | 1 |

Lab Sample ID: LCS 440-77443/2-A
Matrix: Water
Analysis Batch: 77498

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 77443

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Cyanide, Total | 0.200 | 0.213 | | mg/L | | 107 | 90 - 110 |

Lab Sample ID: 440-33540-1 MS
Matrix: Water
Analysis Batch: 77498

Client Sample ID: RW-12-26-12
Prep Type: Total/NA
Prep Batch: 77443

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Cyanide, Total | ND | | 0.200 | 0.218 | | mg/L | | 109 | 70 - 115 |

Lab Sample ID: 440-33540-1 MSD
Matrix: Water
Analysis Batch: 77498

Client Sample ID: RW-12-26-12
Prep Type: Total/NA
Prep Batch: 77443

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cyanide, Total | ND | | 0.200 | 0.192 | | mg/L | | 96 | 70 - 115 | 13 | 15 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: SM 2120B - Color, Colorimetric

Lab Sample ID: 440-33574-B-1 DU
Matrix: Water
Analysis Batch: 75693

Client Sample ID: Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Color | ND | | ND | | Color Units | | NC | 20 |

## Method: SM 2130B - Turbidity

Lab Sample ID: MB 440-75694/5
Matrix: Water
Analysis Batch: 75694

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Turbidity | ND | | 0.10 | NTU | | | 12/27/12 08:32 | 1 |

Lab Sample ID: MRL 440-75694/3 MRL
Matrix: Water
Analysis Batch: 75694

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | MRL Result | MRL Qualifier | Unit | D | %Rec. | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Turbidity | 0.100 | ND | | NTU | | 130 | |

Lab Sample ID: 440-33573-A-26 DU
Matrix: Water
Analysis Batch: 75694

Client Sample ID: Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Turbidity | ND | | ND | | NTU | | NC | 20 |

## Method: SM 2510B - Conductivity, Specific Conductance

Lab Sample ID: MB 440-76014/3
Matrix: Water
Analysis Batch: 76014

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Specific Conductance | ND | | 1.0 | umhos/cm | | | 12/28/12 09:37 | 1 |

Lab Sample ID: LCS 440-76014/4
Matrix: Water
Analysis Batch: 76014

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec. | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Specific Conductance | 659 | 656 | | umhos/cm | | 100 | 90 - 110 |

Lab Sample ID: 440-33540-1 DU
Matrix: Water
Analysis Batch: 76014

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Specific Conductance | 540 | | 540 | | umhos/cm | | 0.0 | 5 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: SM 2520B - Salinity

Lab Sample ID: 440-33540-1 DU
Matrix: Water
Analysis Batch: 76682

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Salinity | ND | | ND | | psu | | NC | 20 |

## Method: SM 2540D - Solids, Total Suspended (TSS)

Lab Sample ID: MB 440-75922/1
Matrix: Water
Analysis Batch: 75922

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids | ND | | 10 | mg/L | | | 12/27/12 19:58 | 1 |

Lab Sample ID: LCS 440-75922/2
Matrix: Water
Analysis Batch: 75922

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Suspended Solids | 1000 | 986 | | mg/L | | 99 | 85 - 115 |

Lab Sample ID: 440-33681-B-1 DU
Matrix: Water
Analysis Batch: 75922

Client Sample ID: Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Total Suspended Solids | 24 | | 23.0 | | mg/L | | 4 | 10 |

## Method: SM 4500 H+ B - pH

Lab Sample ID: 440-33540-1 DU
Matrix: Water
Analysis Batch: 75994

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| pH | 9.74 | HF | 9.750 | | SU | | 0.1 | 2 |

## Method: SM 4500 NH3 D - Ammonia

Lab Sample ID: MB 440-75664/4-A
Matrix: Water
Analysis Batch: 75680

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 75664

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Ammonia (as N) | ND | | 1.0 | mg/L | | 12/27/12 04:30 | 12/27/12 09:38 | 1 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: SM 4500 NH3 D - Ammonia (Continued)

Lab Sample ID: LCS 440-75664/3-A
Matrix: Water
Analysis Batch: 75680

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 75664

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Ammonia (as N) | 5.00 | 4.63 | | mg/L | | 93 | 85 - 115 |

Lab Sample ID: 440-33540-O-1-B MS
Matrix: Water
Analysis Batch: 75680

Client Sample ID: 440-33540-O-1-B MS
Prep Type: Total/NA
Prep Batch: 75664

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Ammonia (as N) | ND | | 5.00 | 4.63 | | mg/L | | 92 | 75 - 125 |

Lab Sample ID: 440-33540-O-1-C MSD
Matrix: Water
Analysis Batch: 75680

Client Sample ID: 440-33540-O-1-C MSD
Prep Type: Total/NA
Prep Batch: 75664

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ammonia (as N) | ND | | 5.00 | 4.82 | | mg/L | | 96 | 75 - 125 | 4 | 15 |

## Method: SM 4500 O G - Oxygen, Dissolved

Lab Sample ID: 440-33540-1 DU
Matrix: Water
Analysis Batch: 75775

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Oxygen, Dissolved | 5.3 | HF | 5.35 | HF | mg/L | | 0.5 | 20 |

## Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 440-75855/4
Matrix: Water
Analysis Batch: 75855

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Total Sulfide | ND | | 0.10 | mg/L | | | 12/27/12 15:40 | 1 |

Lab Sample ID: LCS 440-75855/3
Matrix: Water
Analysis Batch: 75855

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Sulfide | 0.500 | 0.485 | | mg/L | | 97 | 80 - 120 |

Lab Sample ID: 440-33563-K-1 MS
Matrix: Water
Analysis Batch: 75855

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Total Sulfide | 0.10 | | 0.500 | 0.633 | | mg/L | | 107 | 75 - 130 |

## Method: SM 4500 S2 D - Sulfide, Total (Continued)

Lab Sample ID: 440-33563-K-1 MSD
Matrix: Water
Analysis Batch: 75885

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Sulfide | 0.10 | | 0.500 | 0.621 | | mg/L | | 104 | 70 - 130 | 2 | 30 |

## Method: SM 5220D - COD

Lab Sample ID: MB 440-77105/3
Matrix: Water
Analysis Batch: 77105

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | ND | | 20 | mg/L | | | 01/04/13 13:06 | 1 |

Lab Sample ID: LCS 440-77105/4
Matrix: Water
Analysis Batch: 77105

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | 200 | 199 | | mg/L | | 99 | 90 - 110 |

Lab Sample ID: 440-34076-B-1 MS
Matrix: Water
Analysis Batch: 77105

Client Sample ID: Matrix Spike
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | 75 | | 200 | 358 | | mg/L | | 100 | 70 - 120 |

Lab Sample ID: 440-34076-B-1 MSD
Matrix: Water
Analysis Batch: 77105

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | 75 | | 200 | 362 | | mg/L | | 104 | 70 - 120 | 2 | 15 |

Lab Sample ID: 440-34076-B-1 DU
Matrix: Water
Analysis Batch: 77105

Client Sample ID: Duplicate
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | DU Result | DU Qualifier | Unit | D | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|
| Chemical Oxygen Demand | 75 | | 73.1 | | mg/L | | 3 | 15 |

## Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 440-75936/7
Matrix: Water
Analysis Batch: 75936

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | ND | | 1.0 | mg/L | | | 12/27/12 09:47 | 1 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: SM 5310B - Organic Carbon, Total (TOC) (Continued)

Lab Sample ID: LCS 440-75936/6
Matrix: Water
Analysis Batch: 75936

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 10.0 | 9.60 | | mg/L | | 96 | 90 - 110 |

Lab Sample ID: 440-33540-1 MS
Matrix: Water
Analysis Batch: 75936

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 5.2 | | 5.00 | 9.96 | | mg/L | | 96 | 80 - 120 |

Lab Sample ID: 440-33540-1 MSD
Matrix: Water
Analysis Batch: 75936

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Organic Carbon | 5.2 | | 5.00 | 10.3 | | mg/L | | 102 | 80 - 120 | 3 | 20 |

## Method: SM 5540C - Methylene Blue Active Substances (MBAS)

Lab Sample ID: MB 440-75630/4
Matrix: Water
Analysis Batch: 75630

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | MB Result | MB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Methylene Blue Active Substances | ND | | 0.10 | mg/L | | | 12/26/12 18:50 | 1 |

Lab Sample ID: LCS 440-75630/3
Matrix: Water
Analysis Batch: 75630

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Methylene Blue Active Substances | 0.250 | 0.240 | | mg/L | | 96 | 90 - 110 |

Lab Sample ID: 440-33540-1 MS
Matrix: Water
Analysis Batch: 75630

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Methylene Blue Active Substances | 0.12 | | 0.250 | 0.348 | | mg/L | | 91 | 90 - 105 |

Lab Sample ID: 440-33540-1 MSD
Matrix: Water
Analysis Batch: 75630

Client Sample ID: RW-12-26-12
Prep Type: Total/NA

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Methylene Blue Active Substances | 0.12 | | 0.250 | 0.356 | | mg/L | | 94 | 90 - 105 | 2 | 20 |

# QC Sample Results

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Method: SM5210B - BOD, 5 Day

Lab Sample ID: USB 440-75754/1 USB
Matrix: Water
Analysis Batch: 75754

Client Sample ID: Method Blank
Prep Type: Total/NA

| Analyte | USB Result | USB Qualifier | RL | Unit | D | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|
| Biochemical Oxygen Demand | ND | | 2.0 | mg/L | | | 12/27/12 09:00 | 1 |

Lab Sample ID: LCS 440-75754/4
Matrix: Water
Analysis Batch: 75754

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Biochemical Oxygen Demand | 198 | 193 | | mg/L | | 97 | 85 - 115 |

Lab Sample ID: LCSD 440-75754/5
Matrix: Water
Analysis Batch: 75754

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

| Analyte | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|
| Biochemical Oxygen Demand | 198 | 189 | | mg/L | | 96 | 85 - 115 | 1 | 20 |

# QC Association Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## GC/MS VOA

### Analysis Batch: 76675

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 320-1361-A-6 MS | Matrix Spike | Total/NA | Water | 8260B | |
| 320-1361-A-6 MSD | Matrix Spike Duplicate | Total/NA | Water | 8260B | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8260B | |
| LCS 440-76675/5 | Lab Control Sample | Total/NA | Water | 8260B | |
| MB 440-76675/4 | Method Blank | Total/NA | Water | 8260B | |

### Analysis Batch: 77211

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8260B | |
| 440-33684-A-1 MS | Matrix Spike | Total/NA | Water | 8260B | |
| 440-33684-A-1 MSD | Matrix Spike Duplicate | Total/NA | Water | 8260B | |
| LCS 440-77211/6 | Lab Control Sample | Total/NA | Water | 8260B | |
| MB 440-77211/5 | Method Blank | Total/NA | Water | 8260B | |

## GC/MS Semi VOA

### Prep Batch: 76150

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 3520C | |
| LCS 440-76150/2-A | Lab Control Sample | Total/NA | Water | 3520C | |
| LCSD 440-76150/3-A | Lab Control Sample Dup | Total/NA | Water | 3520C | |
| MB 440-76150/1-A | Method Blank | Total/NA | Water | 3520C | |

### Analysis Batch: 76376

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCS 440-76150/2-A | Lab Control Sample | Total/NA | Water | 8270C | 76150 |
| LCSD 440-76150/3-A | Lab Control Sample Dup | Total/NA | Water | 8270C | 76150 |
| MB 440-76150/1-A | Method Blank | Total/NA | Water | 8270C | 76150 |

### Analysis Batch: 77077

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8270C | 76150 |

## GC Semi VOA

### Prep Batch: 75668

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 3510C | |
| LCS 440-75668/2-A | Lab Control Sample | Total/NA | Water | 3510C | |
| LCS 440-75668/4-A | Lab Control Sample | Total/NA | Water | 3510C | |
| LCSD 440-75668/3-A | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| LCSD 440-75668/5-A | Lab Control Sample Dup | Total/NA | Water | 3510C | |
| MB 440-75668/1-A | Method Blank | Total/NA | Water | 3510C | |

### Analysis Batch: 75884

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8081A | 75668 |
| LCS 440-75668/2-A | Lab Control Sample | Total/NA | Water | 8081A | 75668 |
| LCSD 440-75668/3-A | Lab Control Sample Dup | Total/NA | Water | 8081A | 75668 |
| MB 440-75668/1-A | Method Blank | Total/NA | Water | 8081A | 75668 |

## GC Semi VOA (Continued)

### Analysis Batch: 76222

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8082 | 75868 |
| LCS 440-75868/4-A | Lab Control Sample | Total/NA | Water | 8082 | 75868 |
| LCSD 440-75868/5-A | Lab Control Sample Dup | Total/NA | Water | 8082 | 75868 |
| MB 440-75868/1-A | Method Blank | Total/NA | Water | 8082 | 75868 |

## HPLC/IC

### Analysis Batch: 75474

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33528-A-1 MS | Matrix Spike | Total/NA | Water | 300.0 | |
| 440-33528-A-1 MSD | Matrix Spike Duplicate | Total/NA | Water | 300.0 | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 300.0 | |
| LCS 440-75474/7 | Lab Control Sample | Total/NA | Water | 300.0 | |
| MB 440-75474/4 | Method Blank | Total/NA | Water | 300.0 | |

### Analysis Batch: 75475

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33528-A-1 MS | Matrix Spike | Total/NA | Water | 300.0 | |
| 440-33528-A-1 MSD | Matrix Spike Duplicate | Total/NA | Water | 300.0 | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 300.0 | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 300.0 | |
| LCS 440-75475/7 | Lab Control Sample | Total/NA | Water | 300.0 | |
| MB 440-75475/4 | Method Blank | Total/NA | Water | 300.0 | |

### Analysis Batch: 75520

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33528-D-1 MS | Matrix Spike | Total/NA | Water | 7199 | |
| 440-33528-D-1 MSD | Matrix Spike Duplicate | Total/NA | Water | 7199 | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 7199 | |
| LCS 440-75520/15 | Lab Control Sample | Total/NA | Water | 7199 | |
| MB 440-75520/17 | Method Blank | Total/NA | Water | 7199 | |

## Specialty Organics

### Prep Batch: 8436

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8290 | |

### Analysis Batch: 8759

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 8290 | 8436 |

## Metals

### Prep Batch: 51855

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| LCS 490-51855/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 490-51855/1-A | Method Blank | Total Recoverable | Water | 3005A | |

# QC Association Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Metals (Continued)

### Analysis Batch: 52557

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 6010B | 51855 |
| LCS 490-51855/2-A | Lab Control Sample | Total Recoverable | Water | 6010B | 51855 |
| MB 490-51855/1-A | Method Blank | Total Recoverable | Water | 6010B | 51855 |

### Prep Batch: 70885

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 240-19386-A-1-A MSD | Matrix Spike Duplicate | Total/NA | Water | 1631E | |
| 240-19386-A-1-A MS | Matrix Spike | Total/NA | Water | 1631E | |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 1631E | |
| LCS 240-70885/2-A | Lab Control Sample | Total/NA | Water | 1631E | |
| MB 240-70885/1-A | Method Blank | Total/NA | Water | 1631E | |

### Analysis Batch: 71251

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 240-19386-A-1-A MSD | Matrix Spike Duplicate | Total/NA | Water | 1631E | 70885 |
| 240-19386-A-1-A MS | Matrix Spike | Total/NA | Water | 1631E | 70885 |
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 1631E | 70885 |
| LCS 240-70885/2-A | Lab Control Sample | Total/NA | Water | 1631E | 70885 |
| MB 240-70885/1-A | Method Blank | Total/NA | Water | 1631E | 70885 |

### Prep Batch: 76768

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33467-N-1-B MS | Matrix Spike | Total Recoverable | Water | 3005A | |
| 440-33467-N-1-C MSD | Matrix Spike Duplicate | Total Recoverable | Water | 3005A | |
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| LCS 440-76768/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 440-76768/1-A | Method Blank | Total Recoverable | Water | 3005A | |

### Prep Batch: 76794

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| 440-33540-1 MS | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| 440-33540-1 MSD | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| LCS 440-76794/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 440-76794/1-A | Method Blank | Total Recoverable | Water | 3005A | |

### Analysis Batch: 76958

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33467-N-1-B MS | Matrix Spike | Total Recoverable | Water | 6010B | 76768 |
| 440-33467-N-1-C MSD | Matrix Spike Duplicate | Total Recoverable | Water | 6010B | 76768 |
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 6010B | 76768 |
| LCS 440-76768/2-A | Lab Control Sample | Total Recoverable | Water | 6010B | 76768 |
| MB 440-76768/1-A | Method Blank | Total Recoverable | Water | 6010B | 76768 |

### Prep Batch: 77432

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 3005A | |
| 440-33580-K-1-F MS | Matrix Spike | Total Recoverable | Water | 3005A | |
| 440-33580-K-1-G MSD | Matrix Spike Duplicate | Total Recoverable | Water | 3005A | |
| LCS 440-77432/2-A | Lab Control Sample | Total Recoverable | Water | 3005A | |
| MB 440-77432/1-A | Method Blank | Total Recoverable | Water | 3005A | |

# QC Association Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Metals (Continued)

### Analysis Batch: 77469

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 6020 | 76794 |
| 440-33540-1 MS | RW-12-26-12 | Total Recoverable | Water | 6020 | 76794 |
| 440-33540-1 MSD | RW-12-26-12 | Total Recoverable | Water | 6020 | 76794 |
| LCS 440-76794/2-A | Lab Control Sample | Total Recoverable | Water | 6020 | 76794 |
| MB 440-76794/1-A | Method Blank | Total Recoverable | Water | 6020 | 76794 |

### Analysis Batch: 77673

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 6020 | 77432 |
| 440-33580-K-1-F MS | Matrix Spike | Total Recoverable | Water | 6020 | 77432 |
| 440-33580-K-1-G MSD | Matrix Spike Duplicate | Total Recoverable | Water | 6020 | 77432 |
| LCS 440-77432/2-A | Lab Control Sample | Total Recoverable | Water | 6020 | 77432 |
| MB 440-77432/1-A | Method Blank | Total Recoverable | Water | 6020 | 77432 |

### Analysis Batch: 77721

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total Recoverable | Water | 6020 | 77432 |

## General Chemistry

### Analysis Batch: 75630

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 5540C | |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | SM 5540C | |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | SM 5540C | |
| LCS 440-75630/3 | Lab Control Sample | Total/NA | Water | SM 5540C | |
| MB 440-75630/4 | Method Blank | Total/NA | Water | SM 5540C | |

### Prep Batch: 75664

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 4500 NH3 B | |
| 440-33540-O-1-B MS | 440-33540-O-1-B MS | Total/NA | Water | SM 4500 NH3 B | |
| 440-33540-O-1-C MSD | 440-33540-O-1-C MSD | Total/NA | Water | SM 4500 NH3 B | |
| LCS 440-75664/3-A | Lab Control Sample | Total/NA | Water | SM 4500 NH3 B | |
| MB 440-75664/4-A | Method Blank | Total/NA | Water | SM 4500 NH3 B | |

### Analysis Batch: 75680

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 4500 NH3 D | 75664 |
| 440-33540-O-1-B MS | 440-33540-O-1-B MS | Total/NA | Water | SM 4500 NH3 D | 75664 |
| 440-33540-O-1-C MSD | 440-33540-O-1-C MSD | Total/NA | Water | SM 4500 NH3 D | 75664 |
| LCS 440-75664/3-A | Lab Control Sample | Total/NA | Water | SM 4500 NH3 D | 75664 |
| MB 440-75664/4-A | Method Blank | Total/NA | Water | SM 4500 NH3 D | 75664 |

### Analysis Batch: 75692

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2540F | |

# QC Association Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## General Chemistry (Continued)

### Analysis Batch: 75693

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2120B | |
| 440-33574-B-1 DU | Duplicate | Total/NA | Water | SM 2120B | |

### Analysis Batch: 75694

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2130B | |
| 440-33573-A-28 DU | Duplicate | Total/NA | Water | SM 2130B | |
| MB 440-75694/5 | Method Blank | Total/NA | Water | SM 2130B | |
| MRL 440-75694/3 MRL | Lab Control Sample | Total/NA | Water | SM 2130B | |

### Analysis Batch: 75754

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM5210B | |
| LCS 440-75754/4 | Lab Control Sample | Total/NA | Water | SM5210B | |
| LCSD 440-75754/5 | Lab Control Sample Dup | Total/NA | Water | SM5210B | |
| USB 440-75754/1 USB | Method Blank | Total/NA | Water | SM5210B | |

### Analysis Batch: 75775

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 4500 O G | |
| 440-33540-1 DU | RW-12-26-12 | Total/NA | Water | SM 4500 O G | |

### Analysis Batch: 75855

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 4500 S2 D | |
| 440-33583-K-1 MS | Matrix Spike | Total/NA | Water | SM 4500 S2 D | |
| 440-33583-K-1 MSD | Matrix Spike Duplicate | Total/NA | Water | SM 4500 S2 D | |
| LCS 440-75855/3 | Lab Control Sample | Total/NA | Water | SM 4500 S2 D | |
| MB 440-75855/4 | Method Blank | Total/NA | Water | SM 4500 S2 D | |

### Analysis Batch: 75922

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2540D | |
| 440-33601-B-1 DU | Duplicate | Total/NA | Water | SM 2540D | |
| LCS 440-75922/2 | Lab Control Sample | Total/NA | Water | SM 2540D | |
| MB 440-75922/1 | Method Blank | Total/NA | Water | SM 2540D | |

### Analysis Batch: 75936

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 5310B | |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | SM 5310B | |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | SM 5310B | |
| LCS 440-75936/6 | Lab Control Sample | Total/NA | Water | SM 5310B | |
| MB 440-75936/7 | Method Blank | Total/NA | Water | SM 5310B | |

### Analysis Batch: 75994

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 4500 H+ B | |
| 440-33540-1 DU | RW-12-26-12 | Total/NA | Water | SM 4500 H+ B | |

## General Chemistry (Continued)

### Analysis Batch: 76014

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2510B | |
| 440-33540-1 DU | RW-12-26-12 | Total/NA | Water | SM 2510B | |
| LCS 440-76014/4 | Lab Control Sample | Total/NA | Water | SM 2510B | |
| MB 440-76014/3 | Method Blank | Total/NA | Water | SM 2510B | |

### Prep Batch: 76543

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 351.2 | |
| 440-33869-G-1-B MS | Matrix Spike | Total/NA | Water | 351.2 | |
| 440-33869-G-1-C MSD | Matrix Spike Duplicate | Total/NA | Water | 351.2 | |
| LCS 440-76543/3-A | Lab Control Sample | Total/NA | Water | 351.2 | |
| LCSD 440-76543/4-A | Lab Control Sample Dup | Total/NA | Water | 351.2 | |
| MB 440-76543/5-A | Method Blank | Total/NA | Water | 351.2 | |

### Analysis Batch: 76617

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 351.2 | 76543 |
| 440-33869-G-1-B MS | Matrix Spike | Total/NA | Water | 351.2 | 76543 |
| 440-33869-G-1-C MSD | Matrix Spike Duplicate | Total/NA | Water | 351.2 | 76543 |
| LCS 440-76543/3-A | Lab Control Sample | Total/NA | Water | 351.2 | 76543 |
| LCSD 440-76543/4-A | Lab Control Sample Dup | Total/NA | Water | 351.2 | 76543 |
| MB 440-76543/5-A | Method Blank | Total/NA | Water | 351.2 | 76543 |

### Analysis Batch: 76682

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 2520B | |
| 440-33540-1 DU | RW-12-26-12 | Total/NA | Water | SM 2520B | |

### Prep Batch: 77067

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 365.2/365.3/365 | |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | 365.2/365.3/365 | |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | 365.2/365.3/365 | |
| LCS 440-77067/2-A | Lab Control Sample | Total/NA | Water | 365.2/365.3/365 | |
| MB 440-77067/1-A | Method Blank | Total/NA | Water | 365.2/365.3/365 | |

### Analysis Batch: 77098

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 365.3 | 77067 |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | 365.3 | 77067 |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | 365.3 | 77067 |
| LCS 440-77067/2-A | Lab Control Sample | Total/NA | Water | 365.3 | 77067 |
| MB 440-77067/1-A | Method Blank | Total/NA | Water | 365.3 | 77067 |

### Analysis Batch: 77105

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 5220D | |
| 440-34076-G-1 DU | Duplicate | Total/NA | Water | SM 5220D | |
| 440-34076-B-1 MS | Matrix Spike | Total/NA | Water | SM 5220D | |
| 440-34076-B-1 MSD | Matrix Spike Duplicate | Total/NA | Water | SM 5220D | |
| LCS 440-77105/4 | Lab Control Sample | Total/NA | Water | SM 5220D | |

# QC Association Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## General Chemistry (Continued)

### Analysis Batch: 77105 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| MB 440-77105/3 | Method Blank | Total/NA | Water | SM 5220D | |

### Analysis Batch: 77116

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | Nitrogen,Org | |

### Prep Batch: 77360

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 1664A | |
| LCS 440-77360/2-A | Lab Control Sample | Total/NA | Water | 1664A | |
| LCSD 440-77360/3-A | Lab Control Sample Dup | Total/NA | Water | 1664A | |
| MB 440-77360/1-A | Method Blank | Total/NA | Water | 1664A | |

### Analysis Batch: 77393

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 1664A | 77360 |
| LCS 440-77360/2-A | Lab Control Sample | Total/NA | Water | 1664A | 77360 |
| LCSD 440-77360/3-A | Lab Control Sample Dup | Total/NA | Water | 1664A | 77360 |
| MB 440-77360/1-A | Method Blank | Total/NA | Water | 1664A | 77360 |

### Prep Batch: 77443

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 9010B | |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | 9010B | |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | 9010B | |
| LCS 440-77443/2-A | Lab Control Sample | Total/NA | Water | 9010B | |
| MB 440-77443/1-A | Method Blank | Total/NA | Water | 9010B | |

### Analysis Batch: 77498

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | 9014 | 77443 |
| 440-33540-1 MS | RW-12-26-12 | Total/NA | Water | 9014 | 77443 |
| 440-33540-1 MSD | RW-12-26-12 | Total/NA | Water | 9014 | 77443 |
| LCS 440-77443/2-A | Lab Control Sample | Total/NA | Water | 9014 | 77443 |
| MB 440-77443/1-A | Method Blank | Total/NA | Water | 9014 | 77443 |

## Biology

### Analysis Batch: 75804

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 440-33540-1 | RW-12-26-12 | Total/NA | Water | SM 9221E | |

## Qualifiers

### GC/MS VOA

| Qualifier | Qualifier Description |
|---|---|
| F | MS or MSD exceeds the control limits |

### GC/MS Semi VOA

| Qualifier | Qualifier Description |
|---|---|
| * | RPD of the LCS and LCSD exceeds the control limits |

### HPLC/IC

| Qualifier | Qualifier Description |
|---|---|
| F | MS or MSD exceeds the control limits |
| 4 | MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable. |

### General Chemistry

| Qualifier | Qualifier Description |
|---|---|
| HF | Field parameter with a holding time of 15 minutes |
| F | MS or MSD exceeds the control limits |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| CNF | Contains no Free Liquid |
| DER | Duplicate error ratio (normalized absolute difference) |
| DL, RA, RE, IN | Indicates a Dilution, Reanalysis, Re-extraction, or additional initial metals/anion analysis of the sample |
| DLC | Decision level concentration |
| EDL | Estimated Detection Limit |
| EPA | United States Environmental Protection Agency |
| MDA | Minimum detectable activity |
| MDC | Minimum detectable concentration |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| ND | Not detected at the reporting limit (or MDL or EDL if shown) |
| PQL | Practical Quantitation Limit |
| QC | Quality Control |
| RER | Relation error ratio |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |

# Certification Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Alaska | State Program | 10 | CA01531 | 06-30-13 |
| Arizona | State Program | 9 | AZ0671 | 10-13-13 |
| California | LA City Sanitation Districts | 9 | 10250 | 01-31-14 |
| California | NELAP | 9 | 1108CA | 01-31-13 |
| California | State Program | 9 | 2706 | 06-30-14 |
| Guam | State Program | 9 | Cert. No. 12.002r | 01-23-13 |
| Hawaii | State Program | 9 | N/A | 01-31-13 |
| Nevada | State Program | 9 | CA015132007A | 07-31-13 |
| New Mexico | State Program | 6 | N/A | 01-31-13 |
| Northern Mariana Islands | State Program | 9 | MP0002 | 01-31-13 |
| Oregon | NELAP | 10 | 4005 | 08-12-13 |
| USDA | Federal | | P330-08-00080 | 08-06-14 |
| USEPA UCMR | Federal | 1 | CA01531 | 01-31-15 |

## Laboratory: TestAmerica Canton

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| California | NELAP | 9 | 01144CA | 06-30-13 |
| Connecticut | State Program | 1 | PH-0590 | 12-31-13 |
| Florida | NELAP | 4 | E87225 | 06-30-13 |
| Georgia | State Program | 4 | N/A | 06-30-13 |
| Illinois | NELAP | 5 | 200004 | 07-31-13 |
| Kansas | NELAP | 7 | E-10336 | 01-31-13 |
| Kentucky | State Program | 4 | 58 | 06-30-13 |
| L-A-B | DoD ELAP | | L2313 | 02-28-13 |
| Minnesota | NELAP | 5 | 039-999-348 | 12-31-13 |
| Nevada | State Program | 9 | OH-000482008A | 07-31-13 |
| New Jersey | NELAP | 2 | OH001 | 06-30-13 |
| New York | NELAP | 2 | 10975 | 04-01-13 |
| Ohio VAP | State Program | 5 | CL0024 | 01-10-14 |
| Pennsylvania | NELAP | 3 | 68-00340 | 08-31-13 |
| Texas | NELAP | 6 | | 09-03-13 |
| USDA | Federal | | P330-11-00328 | 09-28-14 |
| Virginia | NELAP | 3 | 460175 | 09-14-13 |
| Wisconsin | State Program | 5 | 999518190 | 08-31-13 |

## Laboratory: TestAmerica Nashville

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| | ACIL | | 393 | 10-20-13 |
| A2LA | ISO/IEC 17025 | | 0453.07 | 12-31-13 |
| Alabama | State Program | 4 | 41150 | 06-31-13 |
| Alaska (UST) | State Program | 10 | UST-087 | 07-24-13 |
| Arizona | State Program | 9 | AZ0473 | 05-05-13 |
| Arkansas DEQ | State Program | 6 | 88-0737 | 04-28-13 |
| California | NELAP | 9 | 1168CA | 10-31-13 |
| Canadian Assoc Lab Accred (CALA) | Canada | | 3744 | 03-06-14 |
| Colorado | State Program | 8 | N/A | 02-28-13 |
| Connecticut | State Program | 1 | PH-0220 | 12-31-13 |
| Florida | NELAP | 4 | E87358 | 06-30-13 |

# Certification Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Laboratory: TestAmerica Nashville (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| Illinois | NELAP | 5 | 200010 | 12-09-13 |
| Iowa | State Program | 7 | 131 | 00-01-14 |
| Kansas | NELAP | 7 | E-10229 | 10-31-13 |
| Kentucky (UST) | State Program | 4 | 19 | 09-15-13 |
| Louisiana | NELAP | 6 | 30613 | 06-30-13 |
| Maryland | State Program | 3 | 316 | 03-31-13 |
| Massachusetts | State Program | 1 | M-TN032 | 06-30-13 |
| Minnesota | NELAP | 5 | 047-999-345 | 12-31-13 |
| Mississippi | State Program | 4 | N/A | 06-30-13 |
| Montana (UST) | State Program | 8 | NA | 01-01-15 |
| Nevada | State Program | 9 | TN00032 | 07-31-13 |
| New Hampshire | NELAP | 1 | 2963 | 10-09-13 |
| New Jersey | NELAP | 2 | TN965 | 06-30-13 |
| New York | NELAP | 2 | 11342 | 04-01-13 |
| North Carolina DENR | State Program | 4 | 387 | 12-31-13 |
| North Dakota | State Program | 8 | R-146 | 06-30-13 |
| Ohio VAP | State Program | 5 | CL0033 | 01-19-14 |
| Oklahoma | State Program | 6 | 9412 | 08-31-13 |
| Oregon | NELAP | 10 | TN200001 | 04-30-13 |
| Pennsylvania | NELAP | 3 | 68-00585 | 06-30-13 |
| Rhode Island | State Program | 1 | LAC00230 | 12-30-13 |
| South Carolina | State Program | 4 | 84009 (001) | 02-28-13 |
| South Carolina | State Program | 4 | 84009 (002) | 02-23-14 |
| Tennessee | State Program | 4 | 2008 | 02-23-14 |
| Texas | NELAP | 6 | T104704077-09-1X | 08-31-13 |
| USDA | Federal | | S-48469 | 11-02-13 |
| Utah | NELAP | 8 | TAN | 06-30-13 |
| Virginia | NELAP | 3 | 460192 | 06-14-13 |
| Washington | State Program | 10 | C789 | 07-19-13 |
| West Virginia DEP | State Program | 3 | 219 | 02-28-13 |
| Wisconsin | State Program | 5 | 998030430 | 08-31-13 |
| Wyoming (UST) | A2LA | 8 | 453.07 | 12-31-13 |

## Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| A2LA | DOD ELAP | | 2928-01 | 01-31-14 |
| Alaska (UST) | State Program | 10 | UST-055 | 12-18-13 |
| Arizona | State Program | 9 | AZ0708 | 08-11-13 |
| Arkansas DEQ | State Program | 6 | 88-0691 | 06-17-13 |
| California | NELAP | 9 | 1119CA | 01-31-14 |
| Colorado | State Program | 8 | N/A | 06-31-13 |
| Connecticut | State Program | 1 | PH-0691 | 06-30-13 |
| Florida | NELAP | 4 | E87570 | 06-30-13 |
| Guam | State Program | 9 | N/A | 06-31-13 |
| Hawaii | State Program | 9 | N/A | 01-01-13 |
| Illinois | NELAP | 5 | 200060 | 03-17-13 |
| Kansas | NELAP | 7 | E-10375 | 10-31-13 |
| Louisiana | NELAP | 6 | 30812 | 06-30-13 |
| Michigan | State Program | 5 | 9947 | 01-31-13 |
| Nevada | State Program | 9 | CA44 | 07-31-13 |

# Certification Summary

Client: BP Wilmington Calciner
Project/Site: BP Wilmington Calciner

TestAmerica Job ID: 440-33540-1
SDG: Recycle Water 2012

## Laboratory: TestAmerica Sacramento (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

| Authority | Program | EPA Region | Certification ID | Expiration Date |
|---|---|---|---|---|
| New Jersey | NELAP | 2 | CA005 | 06-30-13 |
| New York | NELAP | 2 | 11666 | 04-01-13 |
| Northern Mariana Islands | State Program | 9 | MP0007 | 01-31-13 |
| Oregon | NELAP | 10 | CA200005 | 03-08-13 |
| Pennsylvania | NELAP | 2 | 68-01272 | 03-31-13 |
| South Carolina | State Program | 4 | 87014 | 06-30-13 |
| Texas | NELAP | 6 | T104704399-08-TX | 08-31-13 |
| US Fish & Wildlife | Federal | | LE148388-0 | 02-28-13 |
| USDA | Federal | | P330-11-00436 | 12-30-14 |
| USEPA UCMR | Federal | 1 | CA00044 | 11-06-14 |
| Utah | NELAP | 8 | QUAN1 | 01-31-13 |
| Washington | State Program | 10 | C581 | 05-05-13 |
| West Virginia | State Program | 3 | 9930C | 12-31-13 |
| West Virginia DEP | State Program | 3 | 334 | 07-31-13 |
| Wyoming | State Program | 8 | 8TMS-Q | 01-31-13 |

# LABORATORY REPORT

Aquatic Testing Laboratories
"Dedicated to providing quality aquatic toxicity testing"
4350 Transport Street, Unit 107
Ventura, CA 93003
(805) 650-0546 FAX (805) 650-0756
CA DOHS ELAP Cert. No.: 1775

**Date:** December 31, 2012

**Client:** Test America – Irvine
17461 Derian Ave., Suite 100
Irvine, CA 92614
Attn: Patty Mata

**Laboratory No.:** A-12122705-001
**Job No.:** 440-33540-1
**Sample ID.:** 440-33540-1

**Sample Control:** The sample was received by ATL in a chilled state, within the recommended hold time and with the chain of custody record attached.

| | |
|---|---|
| Date Sampled: | 12/26/12 |
| Date Received: | 12/27/12 |
| Temp. Received: | 1.6°C |
| Chlorine (TRC): | 0.0 mg/l |
| Date Tested: | 12/27/12 to 12/31/12 |

**Sample Analysis:** The following analyses were performed on your sample:

Fathead Minnow 96hr Percent Survival Bioassay (EPA Method 2000.0).

Attached are the test data generated from the analysis of your sample. All testing was conducted under the direct supervision of Joseph A. LeMay. Daily test readings were taken by Joseph A. LeMay (initialed: JAL) and Jacob LeMay (initialed: J).

**Result Summary:**

| Sample ID. | Results |
|---|---|
| 440-33540-1 | 100% Survival (TUa = 0.0) |

**Quality Control:** Reviewed and approved by:

Joseph A. LeMay
Laboratory Director

This report pertains only to the samples investigated and does not necessarily apply to other apparently identical or similar materials. This report is submitted for the exclusive use of the client to whom it is addressed. Any reproduction of this report or use of the [illegible] advertising or publicity purpose without authorization is prohibited] /23/2013

# FATHEAD MINNOW PERCENT SURVIVAL TEST
## EPA Method 2000.0

Aquatic Testing Laboratories

**Lab No.: A-12122705-001**
**Client/ID: TestAmerica 440-33540-1**

**Start Date: 12/27/2012**

### TEST SUMMARY

Species: *Pimephales promelas*.
Age: 14 (1-14) days.
Regulations: NPDES.
Test solution volume: 250 ml.
Feeding: prior to renewal at 48 hrs.
Number of replicates: 2.
Control water: Moderately hard reconstituted water.
Photoperiod: 16/8 hrs light/dark.

Source: In-laboratory Culture.
Test type: Static-Renewal.
Test Protocol: EPA-821-R-02-012.
Endpoints: Percent Survival at 96 hrs.
Test chamber: 600 ml beakers.
Temperature: 20 +/- 1°C.
Number of fish per chamber: 10.
QA/QC No.: RT-121204.

### TEST DATA

| | | °C | DO | pH | # Dead A | # Dead B | Analyst & Time of Readings |
|---|---|---|---|---|---|---|---|
| INITIAL | Control | 20.1 | 8.9 | 7.5 | 0 | 0 | 12:00 |
| | 100% | 20.2 | 9.7 | 10.4 | 0 | 0 | |
| 24 Hr | Control | 19.8 | 8.7 | 7.4 | 0 | 0 | 12:00 |
| | 100% | 19.9 | 8.8 | 8.9 | 0 | 0 | |
| 48 Hr | Control | 19.7 | 8.7 | 7.6 | 0 | 0 | 12:00 |
| | 100% | 19.5 | 8.7 | 8.0 | 0 | 0 | |
| Renewal | Control | 19.8 | 8.9 | 7.3 | 0 | 0 | 12:00 |
| | 100% | 19.7 | 9.6 | 9.2 | 0 | 0 | |
| 72 Hr | Control | 19.7 | 8.7 | 7.4 | 0 | 0 | 12:00 |
| | 100% | 19.9 | 9.1 | 9.0 | 0 | 0 | |
| 96 Hr | Control | 19.6 | 7.6 | 7.5 | 0 | 0 | 12:00 |
| | 100% | 19.4 | 7.9 | 8.9 | 0 | 0 | |

Comments:
Sample as received: Chlorine: 0.0 mg/l; pH: 10.4; Conductivity: 552 umho; Temp: 1.6°C;
DO: 9.7 mg/l; Alkalinity: 65 mg/l; Hardness: 141 mg/l; $NH_3$-N: 0.4 mg/l.
Sample aerated moderately (approx. 500 ml/min) to raise or lower DO? Yes / (No)
Control: Alkalinity: 64 mg/l; Hardness: 91 mg/l; Conductivity: 274 umho.
Test solution aerated (not to exceed 100 bubbles/min) to maintain DO >4.0 mg/l? Yes / (No)
Sample used for renewal is the original sample kept at 0-6°C with minimal headspace.
Dissolved Oxygen (DO) readings in mg/l $O_2$.

### RESULTS

Percent Survival In: Control: 100 % 100% Sample: 100 %



ED_002551_00001471-00131

TestAmerica Irvine
17461 Derian Ave Suite 100
Irvine, CA 92614-5817
Phone (949) 261-1022 Fax (949) 260-3297

# Chain of Custody Record

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

1/23/2013

| | | | | |
|---|---|---|---|---|
| Client Information (Sub Contract Lab) | Sampler: | Lab PM: Mata, Patty | Carrier Tracking No(s): | COC No: 440-15673.1 |
| Client Contact: Shipping/Receiving | Phone: | E-Mail: patty.mata@testamericainc.com | | Page: Page 1 of 1 |
| Company: Aquatic Testing Laboratories | | Analysis Requested | | Job #: 440-33540-1 |
| Address: 4350 Transport #107 | Due Date Requested: 1/8/2013 | | | Preservation Codes: |
| City: Ventura | TAT Requested (days): | | | |
| State, Zip: CA, 93003 | | | | |
| Phone: | PO #: | | | |
| Email: | WO #: | | | |
| Project Name: BP Wilmington Cellaner Wastewater | Project #: 44007615 | | | |
| Site: | SSOW#: | | | |

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - NaO2S, Q - Na2S2O3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

| Sample Identification - Client ID (Lab ID) | Sample Date | Sample Time | Sample Type (C=comp, G=grab) | Matrix (w=water, s=solid, o=waste/oil, BT=Tissue, A=Air) | Perform MS/MSD (Yes or No) | SUBCONTRACT: Ash/Biomass Max Filtered Min. 100% ET | | | | | | | | | | | | | Total # of containers | Special Instructions/Note: |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Preservation Code: | | | | | X | X | | | | | | | | | | | | | X | |
| RW-12-26-12 (440-33540-1) | 12/26/12 | 11:55 Pacific | | Water | | | X | | | | | | | | | | | | | |

| | | | |
|---|---|---|---|
| Possible Hazard Identification: Unconfirmed | | Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months | |
| Deliverable Requested: I, II, III, IV, Other (specify) | | Special Instructions/QC Requirements: | |
| Empty Kit Relinquished by: | Date: | Time: | Method of Shipment: |

| Relinquished by: | Date/Time: 12/27/12 9:00 | Company: | Received by: | Date/Time: 12-27-12 9:00 | Company: |
|---|---|---|---|---|---|
| Relinquished by: | Date/Time: 12-27-12 12:00 | Company: | Received by: | Date/Time: 12-27-12 12:00 | Company: |
| Relinquished by: | Date/Time: | Company: | Received by: | Date/Time: | Company: |

| | | |
|---|---|---|
| Custody Seals Intact: ☐ Yes ☐ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks: 1-6° |

Aquatic
Testing
Laboratories

# *REFERENCE TOXICANT DATA*

# FATHEAD MINNOW ACUTE
## Reference Toxicant - SDS

Aquatic Testing Laboratories

**QA/QC Batch No.: RT-121204**

### TEST SUMMARY

Species: *Pimephales promelas.*
Age: 12 days old.
Regulations: NPDES.
Test chamber volume: 250 ml.
Feeding: Prior to renewal at 48 hrs.
Temperature: 20 +/- 1°C.
Number of replicates: 2.
Dilution water: MHSF.

Source: In-lab culture.
Test type: Static-Renewal.
Test Protocol: EPA-821-R-02-012.
Endpoints: LC50 at 96 hrs.
Test chamber: 600 ml beakers.
Aeration: None.
Number of organisms per chamber: 10.
Photoperiod: 16/8 hrs light/dark.

### TEST DATA

| | INITIAL | | | 24 Hr | | | | | 48 Hr | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date/Time: | 12-4-12 1300 | | | 12-5-12 1300 | | | | | 12-6-12 1300 | | | | |
| Analyst: | | | | | | | | | | | | | |
| | °C | DO | pH | °C | DO | pH | # Dead A | # Dead B | °C | DO | pH | # Dead A | # Dead B |
| Control | 20.1 | 9.1 | 8.1 | 19.7 | 8.9 | 8.2 | 0 | 0 | 19.6 | 8.6 | 7.9 | 0 | 0 |
| 1.0 mg/l | 20.1 | 9.1 | 8.1 | 19.6 | 8.7 | 8.3 | 0 | 0 | 19.5 | 8.4 | 7.9 | 0 | 0 |
| 2.0 mg/l | 20.0 | 9.0 | 8.1 | 19.7 | 8.5 | 8.2 | 0 | 0 | 19.5 | 8.4 | 7.9 | 0 | 0 |
| 4.0 mg/l | 20.0 | 9.0 | 8.1 | 19.6 | 8.0 | 8.2 | 1 | 0 | 19.5 | 8.4 | 7.9 | 0 | 0 |
| 8.0 mg/l | 20.1 | 9.0 | 8.1 | 19.6 | 7.7 | 8.2 | 10 | 10 | – | – | – | – | – |
| 16.0 mg/l | 20.1 | 9.0 | 8.1 | 19.6 | 7.3 | 8.1 | 10 | 10 | – | – | – | – | – |

| | RENEWAL | | | 72 Hr | | | | | 96 Hr | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Date/Time: | 12-6-12 1300 | | | 12-7-12 1330 | | | | | 12-8-12 1300 | | | | |
| Analyst: | | | | | | | | | | | | | |
| | °C | DO | pH | °C | DO | pH | # Dead A | # Dead B | °C | DO | pH | # Dead A | # Dead B |
| Control | 19.9 | 8.9 | 8.1 | 19.6 | 8.4 | 7.7 | 0 | 0 | 20.0 | 7.4 | 7.6 | 0 | 0 |
| 1.0 mg/l | 19.9 | 8.9 | 8.0 | 19.4 | 8.3 | 7.7 | 0 | 0 | 20.1 | 7.5 | 7.6 | 0 | 0 |
| 2.0 mg/l | 19.9 | 8.7 | 8.0 | 19.4 | 8.4 | 7.7 | 0 | 0 | 20.1 | 7.5 | 7.6 | 0 | 0 |
| 4.0 mg/l | 19.9 | 8.7 | 8.0 | 19.5 | 8.4 | 7.7 | 0 | 0 | 20.1 | 7.5 | 7.5 | 0 | 0 |
| 8.0 mg/l | – | – | – | – | – | – | – | – | – | – | – | – | – |
| 16.0 mg/l | – | – | – | – | – | – | – | – | – | – | – | – | – |

Comments: Control: Alkalinity: 62 mg/l; Hardness: 94 mg/l; Conductivity: 305 umho.
SDS: Alkalinity: 62 mg/l; Hardness: 92 mg/l; Conductivity: 299 umho.

Concentration-response relationship acceptable? (see attached computer analysis):
Yes (response curve normal)
No (dose interrupted indicated or non-normal)

## Acute Fish Test-96 Hr Survival

| | | | | | |
|---|---|---|---|---|---|
| Start Date: | 12/4/2012 13:00 | Test ID: | RT121204f | Sample ID: | REF-Ref Toxicant |
| End Date: | 12/8/2012 13:00 | Lab ID: | CAATL-Aquatic Testing Labs | Sample Type: | SDS-Sodium dodecyl sulfate |
| Sample Date: | 12/4/2012 | Protocol: | ACUTE-EPA-821-R-02-012 | Test Species: | PP-Pimephales promelas |
| Comments: | | | | | |

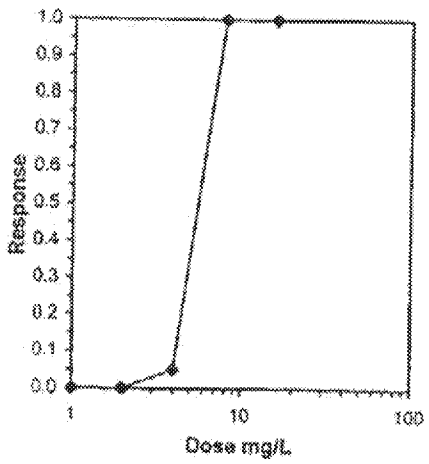
| Conc-mg/L | 1 | 2 |
|---|---|---|
| D-Control | 1.0000 | 1.0000 |
| 1 | 1.0000 | 1.0000 |
| 2 | 1.0000 | 1.0000 |
| 4 | 0.9000 | 1.0000 |
| 8 | 0.0000 | 0.0000 |
| 16 | 0.0000 | 0.0000 |

| | | | Transform: Arcsin Square Root | | | | | Number | Total |
|---|---|---|---|---|---|---|---|---|---|
| Conc-mg/L | Mean | N-Mean | Mean | Min | Max | CV% | N | Resp | Number |
| D-Control | 1.0000 | 1.0000 | 1.4120 | 1.4120 | 1.4120 | 0.000 | 2 | 0 | 20 |
| 1 | 1.0000 | 1.0000 | 1.4120 | 1.4120 | 1.4120 | 0.000 | 2 | 0 | 20 |
| 2 | 1.0000 | 1.0000 | 1.4120 | 1.4120 | 1.4120 | 0.000 | 2 | 0 | 20 |
| 4 | 0.9500 | 0.9500 | 1.3305 | 1.2490 | 1.4120 | 8.661 | 2 | 1 | 20 |
| 8 | 0.0000 | 0.0000 | 0.1588 | 0.1588 | 0.1588 | 0.000 | 2 | 20 | 20 |
| 16 | 0.0000 | 0.0000 | 0.1588 | 0.1588 | 0.1588 | 0.000 | 2 | 20 | 20 |

| Auxiliary Tests | Statistic | Critical | Skew | Kurt |
|---|---|---|---|---|
| Normality of the data set cannot be confirmed | | | | |
| Equality of variance cannot be confirmed | | | | |

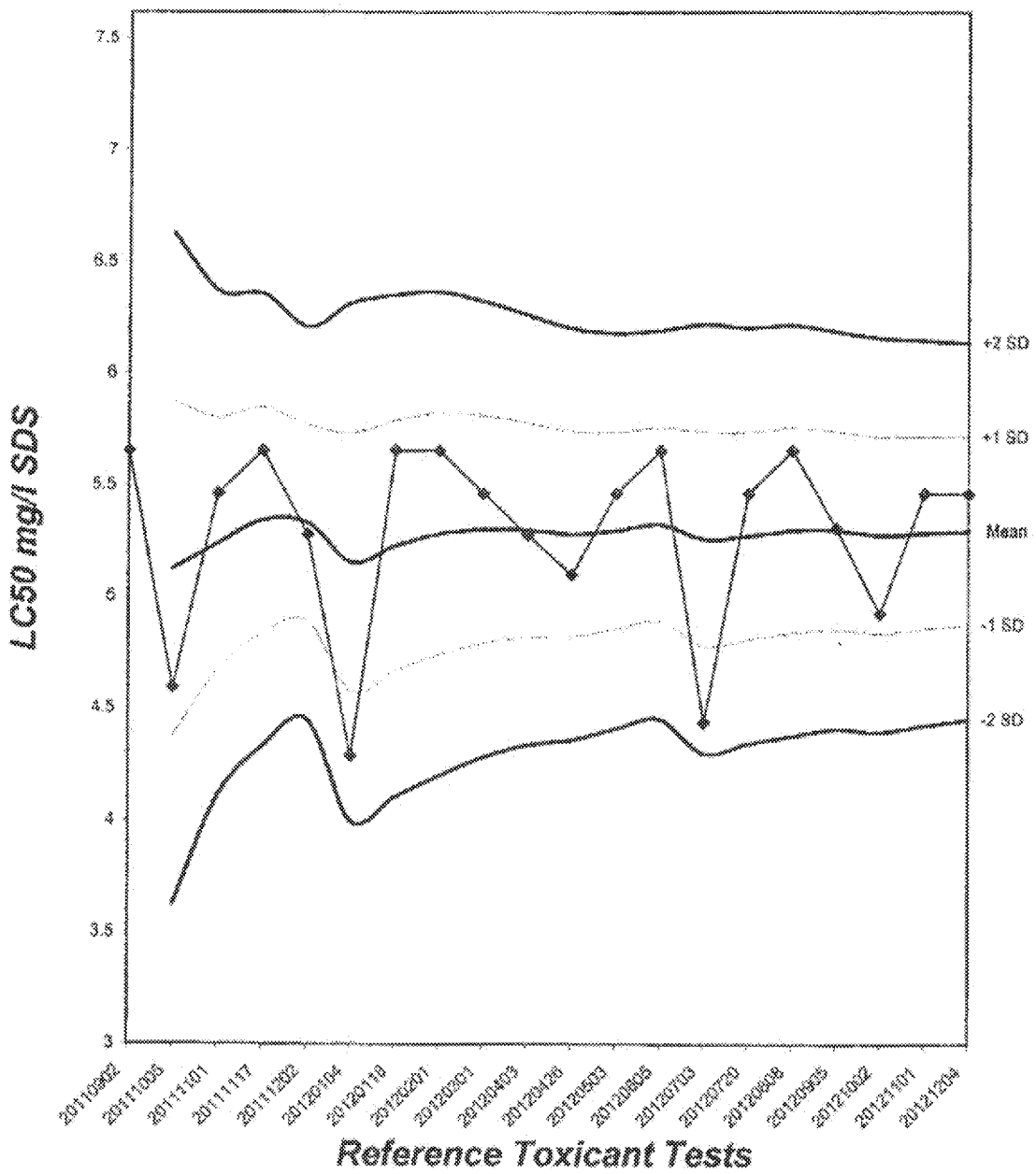
### Trimmed Spearman-Karber

| Trim Level | EC50 | 95% CL | |
|---|---|---|---|
| 0.0% | 5.4642 | 5.1072 | 5.8461 |
| 5.0% | 5.5546 | 5.3505 | 5.7664 |
| 10.0% | 5.5546 | 5.3505 | 5.7664 |
| 20.0% | 5.5546 | 5.3505 | 5.7664 |
| Auto-0.0% | 5.4642 | 5.1072 | 5.8461 |






Reviewed by: 12/27/2013

# Fathead Minnow Acute Laboratory Control Chart

CV% = 7.06