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September 12, 2011

Reference No. 055672

Dr. Adam Mohammed, Ph.D., Hydrologist III
Arizona Department of Environmental Quality
Site Investigation and Remediation Unit I, Corrective Action Section
1110 West Washington Street
Phoenix, Arizona 85007

Dear Dr. Mohammed:

Re: Summary and Evaluation of Site Investigation Activities for Feasibility of Pilot Test
Using In-Situ Chemical Oxidation in Area of Concern 1
Corrective Action - City of Tucson Police/Fire Former Fueling Facility
LUST Site 3208.01; UST Facility 0-005176
Tucson, Arizona

Conestoga-Rovers & Associates (CRA), on behalf of the City of Tucson - Environmental Services (COT-ES), has prepared this summary of the results of the investigative soil and groundwater sampling conducted in Area of Concern 1 (AOC1) in May 2011. The activities took place at the Police/Fire Former Fueling Facility, Leaking Underground Storage Tank (LUST) Site 3208.01 (Site), Underground Storage Tank (UST) Facility 0-005176, located at 260 South Stone Avenue in Tucson, Arizona (**Figure 1**). This letter also summarizes the results of recent treatability study testing and the feasibility of using in-situ chemical oxidation (ISCO) to remediate the remaining soil source at the Site.

1.0 BACKGROUND AND PURPOSE

The soil plume at this Site had been previously defined from an Arizona Department of Environmental Quality (ADEQ) *site characterization* perspective. For purposes of conducting a potential ISCO pilot test, additional soil borings were necessary to determine the lateral extent of residual contaminants of concern (COCs) in soil. Following 6 months of soil vapor extraction (SVE) in AOC1 in 2009, the concentrations of COCs in the soil were reduced significantly, relative to the 2007 sampling. As summarized in the February 11, 2011 letter to ADEQ, all COCs in the HQUST-CB-1 borehole samples were reduced to below the Soil Remediation Level for residential land use (rSRL), with the exception of benzene and 1,2,4-trimethylbenzene at a depth of 35 feet below ground surface (bgs). As the geology at this depth consists of a silty clay with coarser grained soil above and below, it was not unexpected that the contaminant concentrations in the clay would be reduced below the rSRLs, given the long vapor well screen interval in DIW (from 20 to 50 feet bgs) and DIE (from 14 to 49 feet bgs). Additionally, CRA reviewed the Site Characterization Report by EEC (2008) and found that the benzene rSRL was exceeded in HQUST-524A at 30 and 40 feet bgs, with a concentration of 9.5 and 0.72 milligrams per kilogram (mg/kg), respectively, and at HQUST-W at 40 feet bgs with a concentration of 0.68 mg/kg. Therefore, CRA recommended conducting additional soil confirmation borings to

verify the current benzene concentrations near the locations with previous benzene rSRL exceedences.

2.0 RATIONALE FOR SOIL BORINGS/VE WELL INSTALLATION IN AOC1

On April 7, 2011, at a meeting with ADEQ, COT-ES, and CRA, COT-ES and CRA discussed the installation of six soil borings within AOC1 to assess the current COC status in the soils and groundwater, and to further evaluate the remediation that had been performed to date in this area of the Site. The installation of additional boreholes would also allow for refined delineation of the Light Non-Aqueous Phase Liquids (LNAPL) plume.

The soil borings would be either abandoned or converted to vapor extraction (VE) wells based on field observations for the indication of petroleum impacts. The VE wells were proposed for use as possible injection wells, or to connect to the SVE system for remediation, as necessary, to address any residual soil impacts in the vadose zone. The new boring locations are illustrated on **Figure 2**.

3.0 SOIL SAMPLING PROCEDURES

Drilling of the six soil borings, HQUST-IW-1 through HQUST-IW-6, was conducted by WDC Exploration and Drilling between May 16, 2011 and May 20, 2011. An 8-inch diameter borehole was drilled through the upper clay unit into the aquifer, using the hollow stem auger drilling method. During drilling, split-spoon soil samples were collected every 5 feet beginning at 25 feet bgs, to a depth dependant on field screenings. A photo ionization detector (PID) was used to field screen each sample and the results were recorded in the boring logs. All of the samples collected were examined by a CRA geologist, and lithologic logs were developed and were submitted to XENCO Laboratory, Phoenix, Arizona, an Arizona Department of Health Services certified laboratory, for analysis of volatile organic compounds (VOCs) by the Environmental Protection Agency (EPA) Method 8260B, and semi-volatile organic compounds (SVOCs) by EPA Method 8270C.

Upon completion of the drilling, five injection wells were installed (HQUST-IW-1, HQUST-IW-2, HQUST-IW-4, HQUST-IW-5, and HQUST-IW-6). The boreholes were screened in the upper clay bearing unit, with the screen length ranging between 15 and 25 feet, in preparation for ISCO remediation activities. Well construction details for the new wells and existing Site monitoring wells are shown in **Table 1**. The well boring logs were included in the Periodic Site Status Report (PSSR) No. 5, submitted on June 29, 2011.

One boring (HQUST-IW-3) was backfilled with cement/bentonite grout in accordance with ADEQ and Arizona Department of Water Resources (ADWR) guidance. Field screening at this location yielded PID readings of 0.0 parts per million (ppm) for the entire depth of the borehole. This borehole was located up gradient of the source area (**Figure 2**).

The sample results were compared with the baseline results from 2007, and will be further discussed below.

Two gallons of soil were collected from the most visually impacted borehole using field PID screening (HQUST-IW-5) and sent to CRA's treatability study laboratory in Niagara Falls, New York. The samples were characterized for key parameters pertinent to chemical oxidation, including VOCs and pH, to further evaluate the effectiveness of ISCO for possibly treating the soils in AOC1. The details and results from the treatability study are discussed in Section 7.0.

The drill cuttings for the soil borings were placed into a roll-off container and subsequently disposed of off Site at Los Reales Landfill.

4.0 GROUNDWATER SAMPLING PROCEDURES

Grab samples were collected from the groundwater for laboratory analysis in order to evaluate the effectiveness of the remediation system and to further delineate the LNAPL plume. The groundwater samples were collected using a new disposable bailer at the total depth of the drilling activities. The augers were retracted and the sample was collected after allowing for the perched aquifer to recharge, also allowing for the settlement of fine sediments. Depth to water in the boreholes ranged from 63.9 to 70.0 feet bgs, and the bailed groundwater contained no visible free product at any of the sample locations. All groundwater samples were packed on wet ice and submitted to XENCO Laboratory in Phoenix, Arizona for analysis of VOCs by EPA Method 8260B.

5.0 EVALUATION OF ANALYTICAL RESULTS OF SOIL SAMPLES (CURRENT AND HISTORIC)

An evaluation of the analytical results of the soil samples is summarized below:

- Soil sample results for boreholes HQUST-IW-1, HQUST-IW-3, HQUST-IW-4, and HQUST-IW-6 were all non-detect for benzene, toluene, ethylbenzene, and xylene (BTEX) compounds.
- Results for the samples collected at HQUST-IW-5 showed the presence of BTEX compounds from 25 to 45 feet bgs, specifically benzene, which displayed concentrations above its rSRL of 0.65 mg/kg from 25 to 35 feet bgs. The benzene concentration was highest at 35 feet bgs (3.75 mg/kg) but was below the rSRL at 40 and 45 feet bgs (0.168 mg/kg and 0.0588 mg/kg, respectively). BTEX compounds were all non-detect at 50 feet bgs in HQUST-IW-5.

- A concentration of 0.807 mg/kg for benzene was the only exceedance of the rSRLs for BTEX compounds at HQUST-IW-2. Results for BTEX compounds are summarized in **Table 2** for the soil sampling conducted in May 2011.
- A general evaluation of the soil samples at the 25 to 35-foot depth indicated that the soil at this depth is inorganic silty-clay of medium plasticity.

When compared to the historical soil sample results from 2007, BTEX concentrations have decreased significantly. A historical summary of analytical data for the soil sampling events is provided in **Table 3**. **Attachment A** includes the laboratory analytical reports for the May 2011 sampling.

The results show that the soil contaminant plume surrounds HQUST-524A and is approximately delineated by HQUST-IW-5 (**Figure 3**). Therefore, further remediation is recommended.

6.0 EVALUATION OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLES

Results for BTEX from the groundwater sampling conducted at each borehole are summarized in **Table 4**. **Attachment A** includes the laboratory analytical reports for the May 2011 groundwater sampling. BTEX was found in concentrations above the AWQS at each borehole except for HQUST-IW-3; however, benzene concentrations were at levels low enough to confirm that LNAPL is not present in the immediate vicinity of the borings.

HQUST-IW-1 is located in the source area and showed elevated levels of benzene, toluene, and ethylbenzene above the AWQS (**Table 4**). Toluene was also present in HQUST-IW-2 above the AWQS. The groundwater contaminant plume and groundwater contours are shown on **Figure 4**.

7.0 ISCO TREATABILITY STUDY

The objectives of the treatability study performed by CRA were:

- To assess the effectiveness of ISCO for the treatment of the residual VOC's that remain above the rSRLs
- To determine the most effective oxidant for the treatment
- To assess the variability of the total oxidant demand (TOD) in the treatment area
- To determine the effective concentration and dosage of the oxidant required to complete the treatment as effectively as possible.

ISCO has proven to be an effective technology for destroying a wide range of VOCs. The technology is based on the use of strong oxidizing agents to completely oxidize the VOCs within relatively short periods. A critical factor in the evaluation of ISCO treatment is determining the dosages of oxidant that are required to effectively oxidize the contaminants present (referred to as stoichiometric demand) as well as the competing reactions. The competing reactions are typically caused by the presence of natural organic materials such as humates and fulvates, as well as reduced metal species. The consumption of oxidants by these non-target compounds is defined as TOD. In order to determine the optimum dosage, treatability studies are required. For this pilot test, ISCO would be used to remediate lingering organic compounds in the vadose zone where contamination still persists.

Two gallons of soil from the target area were collected and submitted to CRA's laboratory in Niagara Falls, New York, during the installation of the injection wells in May 2011. The soil was collected at HQUST-IW-5 from a depth of 25 to 45 feet bgs. An initial characterization was done to analyze for VOCs, gasoline range organics (GRO), and pH. The results from the study are included in **Attachment B**.

Neither sample contained BTEX compounds above the analytical detection limit of 50 micrograms per kilogram ($\mu\text{g}/\text{kg}$), although GRO was present at concentrations of 13.6 mg/kg and 23.9 mg/kg. The soil had a slightly alkaline pH, ranging between 8.1 and 8.3 pH units.

A series of batch microcosm tests were designed to assess the effectiveness of the activated sodium persulfate at the Site and to determine the optimum concentration or dosage of oxidant required for the ISCO treatment of residual BTEX constituents. However, since no BTEX compounds were detected the samples provided to the lab, the testing was done with total petroleum hydrocarbons (TPH) reductions. As discussed below, this indirect measurement likely overestimates the amount of persulfate to treat TPH (not BTEX).

The microcosm tests consisted of placing 100 grams of soil in 4-ounce glass jars and mixing with 25 milliliters (mL) of activated sodium persulfate solution and concentrations of 10, 15, and 30 percent weight. The pH of each jar was adjusted to 12 pH units by adding sodium hydroxide (NaOH) or quicklime. The jars were sealed and incubated for 2 weeks and then resampled for VOCs.

The TOD was also measured. The results from the chemical oxidation microcosm tests and the TOD data help to determine the required dose of sodium persulfate for the Site. The TOD testing consisted of placing 50 grams of soil from each bag in separate 8-ounce jars and adding 100 mL of 15 percent quicklime activated sodium persulfate. The jars were sealed and sampled after 1 week to determine the sodium persulfate concentration. The TOD from the soil 25 to 35 feet bgs was 77 grams per kilogram (g/kg) while the TOD from the soil 35 to 45 feet bgs was 52 g/kg.

The affected area for proposed residual BTEX treatment (above rSRLs) is from 25 to 35 feet bgs and therefore the microcosm test from 35 to 45 feet were not utilized. The indirect measurement and testing of TPH reductions likely overestimated the amount of persulfate needed for treatment (not BTEX). CRA contacted the sodium persulfate manufacturer and presented the treatability study results to them. The manufacturer utilized the data and prepared an estimate of the quantity of persulfate needed, given the Site conditions. This information is included as **Attachment C**.

8.0 PILOT TEST PLAN - FIELD IMPLEMENTATION

The results from the treatability study indicate that the residual BTEX impacted soil that was tested from HQUST-IW-5 in AOC1 would benefit from the ISCO pilot test using sodium persulfate and NaOH. Therefore, CRA is recommending a single initial injection event to be administered into the soil in the vadose zone of AOC1.

During the drilling in May 2011, HQUST-IW-5 contained the highest levels of BTEX from depths 25 to 45 feet bgs, specifically benzene in which the results showed levels above the rSRLs. The area that will be targeted in the pilot study will be a 20-foot radius surrounding well HQUST-524A. Injection will occur in wells HQUST-IW-2, HQUST-IW-5, HQUST-524A, DIW, and DIE. **Figure 3** depicts the area of impact. CRA's Site-specific Health and Safety Plan will be updated and reviewed by CRA's Regional Health and Safety Officer prior to initiating field work.

For this ISCO pilot test, sodium persulfate will be used as the oxidizer and NaOH will be used as the activator. Preliminary estimates of approximately 1,700 pounds of persulfate and 210 gallons of NaOH will be needed to treat an estimated soil plume area of 1,200 square feet (30 feet x 40 feet) and 10 feet thick, based on benzene concentrations of 1.23 to 3.75 mg/kg. The oxidant and accelerator will be mixed with water according to the manufacturer's specifications to reach the recommended 25 weight percent (wt%) mixture. It is estimated that injection volumes may reach 2,100 gallons per day, with injection occurring simultaneously in all five wells at a rate of one gallon per minute.

Field implementation of the ISCO pilot test will commence by setting up a storage area, staged on the concrete parking lot, for the storage of the materials. The storage area will be lined and bermed. There needs to be sufficient space between the two materials to avoid contact prior to injection. The oxidant will be delivered to the Site in dry form in 55.1-pound bags and will be covered in the storage area with a water proof tarpaulin to ensure that the bags remain dry. The activator will be delivered to the Site in liquid form, and each drum will be stored on the lined bermed area on the concrete pad.

The persulfate and NaOH will be mixed in poly tanks and the solutions will be injected into the subsurface using a transfer pump, targeting the vadose zone where residual BTEX compounds

remain, located approximately 20 to 35 feet bgs. Well construction details with screened intervals can be found in **Table 1**. After the injection is complete, the piping and casing must be purged with water (approximately two pipe volumes per well).

9.0 FIELD EQUIPMENT AND MATERIAL

Equipment required for the mixing and the injection of the solutions will be rented from the manufacturer of the oxidant (FMC) to facilitate efficient mixing of the oxidant and activator. The specifications of this pilot test equipment will be determined prior to field mobilization; however, it is anticipated to include, but not be limited to the following materials:

- Transfer Pump
- Chemical feed system and five gallon wash down tank
- Two poly mixing tanks
- Solution instrumentation, including pressure gauges and flow totalizers

An aboveground manifold constructed of 1-inch schedule 40 PVC with tubing, equipped with ball valves to control flow to each well will be constructed prior to the commencement of the field activities.

10.0 WASTE HANDLING AND DISPOSAL

Waste and personal protective equipment produced from the injection event will be disposed of properly in the on-Site waste dumpsters. The empty drums in which the NaOH will be transported in will undergo a quadruple rinse in accordance with the manufactures guidelines with the rinsate water being poured down the injection wells. The empty drums may then be disposed of at Los Reales Landfill.

11.0 PILOT TEST EFFECTIVENESS/PERFORMANCE MONITORING

No ISCO pilot test performance monitoring of the soil is planned during the pilot test to monitor ISCO effectiveness. However, during normal monthly groundwater level measurements, water levels will be monitored for potential water level changes (due to oxidant reaching/recharging the groundwater). Given the nature of the underlying clay to be treated, this is not anticipated. However, CRA will monitor the groundwater for signs of persulfate and have persulfate field indicator kits at HQUST-524.

The results of the ISCO will be verified with future soil sampling. A contingency soil boring is recommended in the area of the former highest BTEX concentration, near HQUST-IW-5. The boring would be drilled to 35 feet bgs as the soil samples collected below 35 feet from

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HQUST-IW-5 were below the rSRLs for BTEX. This confirmation boring would be completed approximately 3 to 6 months after the injection events are complete.

12.0 EVALUATION AND REPORTING

At the conclusion of the pilot testing, a report of the pilot test results will be prepared. The report will include the results from the confirmation soil boring. It will also evaluate whether or not the pilot test met the test objectives, which are to confirm the effectiveness of injection of a chemical oxidizing agent to remediate localized and residual impacts of VOCs in AOC1, or if another injection of oxidant may be needed to meet remedial objectives.

Recommendations for any future changes to the remediation approach will also be presented.

13.0 IMPLEMENTATION SCHEDULE AND REFERENCES

The required material will be ordered from the manufacturer in August 2011. It is anticipated the pilot test will commence in September 2011.

Please feel free to contact the undersigned at (602) 749-9400 if you have any questions or need further clarification.

Yours truly,

Conestoga-Rovers & Associates



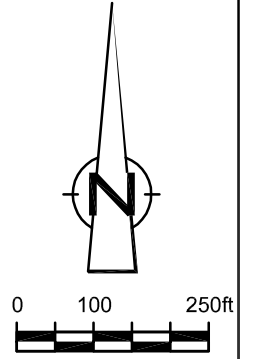
EXPIRES 03/31/14

Manfred Plaschke, R.G.

MP/rrw/lu/Moha-005
Encl.

cc:	Joyce Garland, COT Finance-Accounting	Jeff Drumm, COT-ES
	Shane Oman, Finance-Accounting	Richard Byrd, COT-ES
	Ron Lewis, COT General Services	Pete Schwarz, CRA(e-mail)
	Andrew Quigley, COT-ES	Police/Fire LUST File
	Nancy Petersen, COT-ES	

FIGURES



LEGEND

- WELL LOCATIONS
- AOC AREA OF CONCERN
- NEW SVE/INJECTION WELL
- ⊕ SOIL BORING - GROUTED



figure 1
 SITE PLAN
 CITY OF TUCSON POLICE/FIRE FORMER FUELING FACILITY
 DPE REMEDIAL ACTION SITE
 Tucson, Arizona

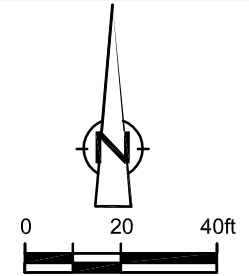
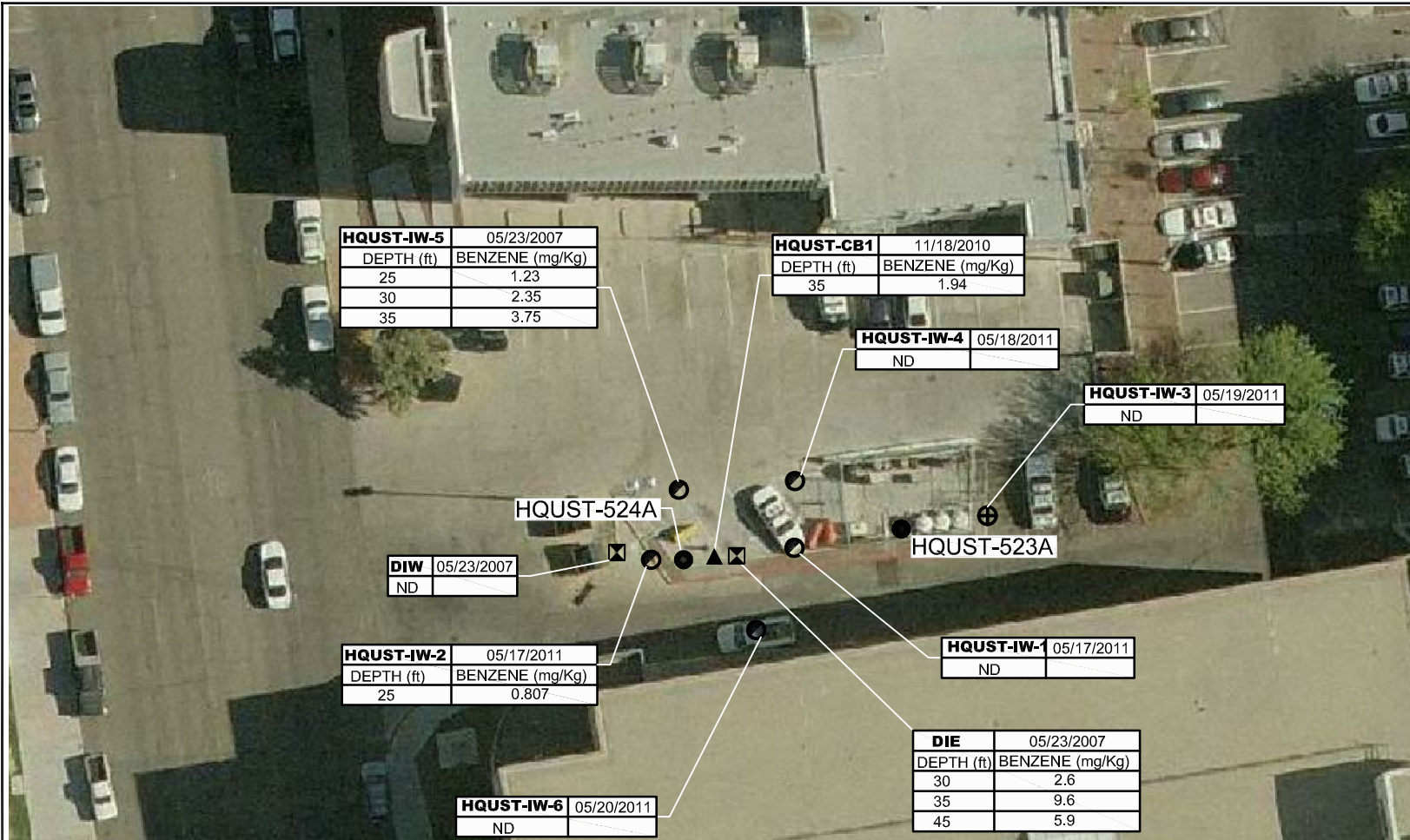


LEGEND

- MONITORING/EXTRACTION WELLS
- ☒ SOIL VAPOR WELLS
- ⦿ NEW SVE/INJECTION WELL (5)
- ⊕ SOIL BORING - GROUTED (IW-3)
- ▲ SOIL BORING FROM NOVEMBER 2010

figure 2
SOIL BORING LOCATIONS
CITY OF TUCSON POLICE/FIRE FUELING FACILITY
DPE REMEDIAL ACTION SITE
Tucson, Arizona





LEGEND

- MONITORING/EXTRACTION WELLS
- ⊠ SOIL VAPOR WELLS
- ⊙ NEW SVE/INJECTION WELL (5)
- ⊕ SOIL BORING - GROUTED (IW-3)
- ▲ SOIL BORING FROM NOVEMBER 2010

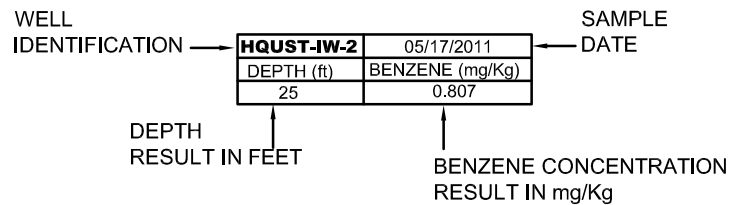


figure 3

BENZENE DETECTIONS
CITY OF TUCSON POLICE/FIRE FUELING FACILITY
DPE REMEDIAL ACTION SITE
Tucson, Arizona





LEGEND

- WELL LOCATIONS
- GROUNDWATER ELEVATION CONTOURS
DASHED WHERE APPROXIMATE
- - - APPROXIMATE EXTENT OF LNAPL
- NM NOT MEASURED
- (0.18) LNAPL MEASURED IN WELL

NOTES

1. GROUNDWATER MEASUREMENTS TAKEN MAY 2011.

figure 4
GROUNDWATER CONTOUR MAP-MAY 2011
CITY OF TUCSON POLICE/FIRE FUELING FACILITY
DPE REMEDIAL ACTION SITE
Tucson, Arizona



TABLES

TABLE 1

SUMMARY OF WELL CONSTRUCTION DETAILS - AOC1
CITY OF TUCSON POLICE/FIRE FORMER FUELING FACILITY
TUCSON, ARIZONA

AOC1 Boring ID	ADWR No.	Ground Elevation	Top of Casing Elevation	Depth to Water	GW Elevation	Install Date (Start)	Install Date (End)	Method	Hole Depth	Borehole Diameter	Well Depth BTOC	Screened Interval (ft bgs)	Casing Diameter	Screen Size (Slotted)	Casing Material	Consultant	Contractor	Logged By	Abandoned	Abandon Date
CEP-518A	55-906115	2,386.02	2,385.52	65.79	2,320.23	12/11/06	12/12/06	HSA	77.0	NR	75.0	55-75	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH/WB	No	NA
CEP-519A	55-906116	2,382.17	2,381.67	61.84	2,320.33	12/19/06	12/20/06	HSA	72.0	NR	71.0	51-71	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	CH/WB	No	NA
CEP-520A	55-906117	2,379.90	2,379.40	59.80	2,320.10	12/11/06	12/15/06	HSA	72.0	NR	71.0	51-71	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH/WB	No	NA
HQUST-523A	55-907043	2,383.35	2,382.85	63.32	2,320.03	5/21/07	5/21/07	HSA	74.5	NR	74.5	54.5-74.5	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
HQUST-524A	55-907042	2,382.71	2,382.21	62.71	2,320.00	5/23/07	5/24/07	HSA	71.0	NR	70.0	50-70	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
HQUST-525A	55-907068	2,392.00	2,391.50	71.74	2,320.26	6/5/07	6/5/07	HSA	83.5	NR	83.0	63-83	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
HQUST-526A	55-907044	2,380.70	2,379.57	60.42	2,320.28	5/31/07	5/31/07	HSA	71.0	NR	70.0	50-70	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
CEP-527A	55-907234	2,357.98	2,357.48	NA	NA	6/18/07	6/18/07	HSA	52.0	NR	51.0	30-50	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
CEP-528A	55-907236	2,360.28	2,359.78	NA	NA	6/18/07	6/18/07	HSA	51.0	NR	50.5	30.5-50.5	4"	0.02	Sch. 40 PVC	EEC	Layne Christensen	KP/CH	No	NA
HQUST-531A	55-907927	2,379.36	2,378.36	60.00	2,319.36	10/9/07	10/10/07	HSA	72.5	NR	72.5	52.5-72.5	4"	0.02	Sch. 40 PVC	EEC	Geomechanics Southwest	KP/CH	No	NA
HQUST-532A	55-907928	2,382.75	2,382.75	63.20	2,319.55	10/11/07	10/12/07	HSA	73.5	NR	73.0	53-73	4"	0.02	Sch. 40 PVC	EEC	Geomechanics Southwest	KP/CH	No	NA
HQUST-533A	55-907929	2,379.29	2,379.29	59.99	2,319.30	10/18/07	10/19/07	HSA	73.0	NR	72.5	52.5-72.5	4"	0.02	Sch. 40 PVC	EEC	Geomechanics Southwest	KP/CH	No	NA
DIE	-	NR	NR	NA	NA	NR	6/1/08	HSA	55.0	NR	49.0	14-49	2"	0.02	Sch. 40 PVC	EEC	NR	KP/CH	No	NA
DIW	-	NR	NR	NA	NA	NR	6/1/08	HSA	50.0	NR	50.0	20-50	2"	0.02	Sch. 40 PVC	EEC	NR	KP/CH	No	NA
HQUST-W	-	2382.00	NR	NA	NA	NR	5/23/07	HSA	50.0	NR	NR	NA	NA	NA	NA	EEC	NR	KP	Yes	NR
HQUST-547	55-912703	NR	NR	70.5	NA	11/16/10	11/20/10	HSA	90.0	10"	85.0	55-85	4"	0.02	Sch. 40 PVC	CRA	WDC	S. King	No	NA
HQUST-548	55-912704	NR	NR	67	NA	11/20/10	11/22/10	HSA	80.0	10"	78.5	58.5-78.5	4"	0.02	Sch. 40 PVC	CRA	WDC	S. King	No	NA
HQUST-CB1	55-912702	NA	NA	65	NA	11/17/10	11/18/10	HSA	80.0	10"	NA	NA	NA	NA	NA	CRA	WDC	S. King	Yes	11/18/10
HQUST-IW-1	-	NR	NR	64	NA	5/16/11	5/17/11	HSA	70.0	8"	70.0	20-35	4"	0.02	Sch. 40 PVC	CRA	WDC	M. Smith	No	NA
HQUST-IW-2	-	NR	NR	63.40	NA	5/16/11	5/18/11	HSA	70.0	8"	70.0	20-35	4"	0.02	Sch. 40 PVC	CRA	WDC	M. Smith	No	NA
HQUST-IW-3	-	NR	NR	64.87	NA	5/16/11	5/20/11	HSA	70.0	8"	NA	NA	NA	NA	NA	CRA	WDC	M. Smith	Yes	5/20/11
HQUST-IW-4	-	NR	NR	63.92	NA	5/16/11	5/18/11	HSA	70.0	8"	70.0	20-35	4"	0.02	Sch. 40 PVC	CRA	WDC	M. Smith	No	NA
HQUST-IW-5	-	NR	NR	64	NA	5/16/11	5/19/11	HSA	70.0	8"	70.0	20-45	4"	0.02	Sch. 40 PVC	CRA	WDC	M. Smith	No	NA
HQUST-IW-6	-	NR	NR	64	NA	5/16/11	5/20/11	HSA	75.0	8"	75.0	20-35	4"	0.02	Sch. 40 PVC	CRA	WDC	M. Smith	No	NA

Notes:

- GW = Groundwater
- HSA = Hollow Stem Auger
- BTOC = Below top of casing
- ft bgs = feet below ground surface
- NA = Not Applicable
- NR=Not Recorded
- ' = Not issued at time of report

TABLE 2

**SUMMARY OF SOIL RESULTS FROM INVESTIGATIVE MAY 2011 DRILLING
CITY OF TUCSON POLICE/FIRE FORMER FUELING FACILITY
TUCSON, ARIZONA**

Sample Location	Laboratory ID	Sample Depth (feet)	Results (mg/kg)			
			SRL Benzene 0.65	Toluene 650	Ethylbenzene 400	Xylenes 270
IW-1	S-051711-MES-01	25	ND (0.0474)	ND (0.0949)	ND (0.0949)	ND (0.0474)
	S-051711-MES-02	30	ND (0.0503)	ND (0.0101)	ND (0.0101)	ND (0.0503)
	S-051711-MES-03	35	ND (0.0458)	ND (0.0916)	ND (0.0916)	ND (0.0458)
	S-051711-MES-04	40	ND (0.0457)	ND (0.0914)	ND (0.0914)	ND (0.0457)
	S-051711-MES-05	45	ND (0.0451)	ND (0.0903)	ND (0.0903)	ND (0.0451)
IW-2	S-051711-MES-07	25	0.807	0.295	0.302	0.624
	S-051711-MES-08	30	ND (0.0485)	ND (0.0971)	ND (0.0971)	ND (0.0485)
	S-051711-MES-09	35	0.134	ND (0.103)	ND (0.103)	ND (0.0515)
	S-051711-MES-10	40	ND (0.0434)	ND (0.0868)	ND (0.0868)	ND (0.0434)
	S-051711-MES-11	40	ND (0.0492)	ND (0.0984)	ND (0.0984)	ND (0.0492)
IW-4	S-051811-MES-13	25	ND (0.0393)	ND (0.0786)	ND (0.0786)	ND (0.0393)
	S-051811-MES-14	30	ND (0.0442)	ND (0.0883)	ND (0.0883)	ND (0.0442)
	S-051811-MES-15	35	ND (0.0441)	ND (0.0882)	ND (0.0882)	ND (0.0441)
	S-051811-MES-16	40	ND (0.0427)	ND (0.0853)	ND (0.0853)	ND (0.0427)
IW-5	S-051911-MES-18	25	1.23	ND (0.0891)	1.79	0.0504
	S-051911-MES-19	30	2.35	6.25	15.5	33
	S-051911-MES-20	35	3.75	3.98	1.27	2.31
	S-051911-MES-21	40	0.168	0.445	0.268	0.735
	S-051911-MES-22	45	0.0588	0.265	0.447	1.93
	S-051911-MES-23	50	ND (0.0507)	ND (0.101)	ND (0.101)	ND (0.0507)
IW-3	S-051911-MES-25	25	ND (0.0448)	ND (0.0896)	ND (0.0896)	ND (0.0448)
	S-051911-MES-26	25	ND (0.0442)	ND (0.0883)	ND (0.0883)	ND (0.0442)
	S-051911-MES-27	30	ND (0.0483)	ND (0.0965)	ND (0.0965)	ND (0.0483)
	S-051911-MES-28	35	ND (0.0475)	ND (0.0951)	ND (0.0951)	ND (0.0475)
	S-051911-MES-29	40	ND (0.0590)	ND (0.0118)	ND (0.0118)	ND (0.0590)
IW-6	S-052011-MES-31	25	ND (0.0405)	ND (0.0810)	ND (0.0810)	ND (0.0405)
	S-052011-MES-32	30	ND (0.0510)	ND (0.102)	ND (0.102)	ND (0.0510)
	S-052011-MES-33	35	ND (0.0571)	ND (0.114)	ND (0.114)	ND (0.0571)
	S-052011-MES-34	40	ND (0.0454)	ND (0.0907)	ND (0.0907)	ND (0.0454)

Notes:

ft = feet

mg/kg = milligrams per kilogram

SRL = Soil Remediation Level for residential land use (AAC R18-7-201 et seq.)

ND () = Not detected at the reporting limit in parenthesis

BOLD = Compound exceeds the SRL for residential land use

TABLE 3
HISTORICAL SUMMARY OF ANALYTICAL DATA
CITY OF TUCSON POLICE/FIRE FORMER FUELING FACILITY
TUCSON, ARIZONA

Sample Location Sample Identification Sample Date Sample Depth Sample Type	rSRL	CEP-527A CEP-527A-40' 7/2/2007 40 feet	CEP-528A CEP-528A-41' 6/19/2007 41 feet	HQ-UST-523A HQ-UST-523A-55 5/21/2007 55 feet	HQ-UST-524A HQ-UST-524A-20' 5/23/2007 20 feet	HQ-UST-524A HQ-UST-524A-30' 5/23/2007 30 feet	HQ-UST-524A HQ-UST-524A-40' 5/24/2007 40 feet	HQ-UST-524A HQ-UST-524A-50' 5/24/2007 50 feet	HQ-UST-524A HQ-UST-524A-60' 5/24/2007 60 feet	HQ-UST-526A HQ-UST-526A-20' 5/31/2007 20 feet	HQ-UST-531A HQ-UST-531A-55' 10/9/2007 55 feet	HQ-UST-533A HQ-UST-533A-60' 10/18/2007 60 feet	HQUST-CB1 SK-11182010-1 11/18/2010 30 feet	HQUST-CB1 SK-11182010-2 11/18/2010 35 feet	HQUST-CB1 SK-11182010-3 11/18/2010 40 feet
Metals															
Chromium		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Lead	400	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Magnesium		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Manganese		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Total Petroleum Hydrocarbons															
Total Petroleum Hydrocarbons (C10-C22) Diesel		33	30	550	390	610	63	<	<	32	NM	NM	NM	NM	NM
Total Petroleum Hydrocarbons (C10-C32) Fuel		<	<	<	390	610	<	<	<	<	NM	NM	NM	NM	NM
Total Petroleum Hydrocarbons (C6-C10) GRO		22	<	1,100	730	2,400	130	<	<	<	NM	NM	NM	NM	NM
Semi-Volatile Organic Compounds															
1,2,4-Trichlorobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,2-Dichlorobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,3-Dichlorobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
1,4-Dichlorobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,2'-Oxybis(1-chloropropane) (bis(2-Chloroisopropyl) ether)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,4,6-Trichlorophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,4-Dichlorophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,4-Dimethylphenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,4-Dinitrophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,4-Dinitrotoluene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2,6-Dinitrotoluene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-Chloronaphthalene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-Chlorophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-Methylnaphthalene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-Methylphenol	3,100	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
2-Nitrophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
3&4-Methylphenol	310	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
3,3'-Dichlorobenzidine		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4,6-Dinitro-2-methylphenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4-Bromophenyl phenyl ether		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4-Chloro-3-methylphenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4-Chloroaniline		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4-Chlorophenyl phenyl ether		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
4-Nitrophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Acenaphthene	3,700	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Acenaphthylene	NE	NM	NM	0.76	0.83	NM	<	NM	NM	NM	<	<	<0.050	<0.050	<0.050
Anthracene	22,000	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Azobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Benzo(a)anthracene	6.9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Benzo(a)pyrene	0.69	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Benzo(b)fluoranthene	6.9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	69	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Benzoic acid		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Benzyl alcohol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
bis(2-Chloroethoxy)methane		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
bis(2-Chloroethyl)ether		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
bis(2-Ethylhexyl)phthalate (DEHP)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Butyl benzylphthalate (BBP)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Chrysene	680	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	0.69	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Dibenzofuran		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Diethyl phthalate		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Dimethyl phthalate		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Di-n-butylphthalate (DBP)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Di-n-octyl phthalate (DnOP)		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Fluoranthene	2,300	NM	NM	0.055	<	<	<	<	<	<	<	<	<0.050	<0.050	<0.050
Fluorene	2,700	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Hexachlorobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Hexachlorobutadiene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Hexachlorocyclopentadiene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Hexachloroethane		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Indeno(1,2,3-cd)pyrene	6.9	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	<0.050	<0.050	<0.050
Isophorone		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Naphthalene	56	NM	NM	2.6	3.7	NM	0.46	NM	NM	NM	<	1.1	0.383	1.09	8.96
Nitrobenzene		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
N-Nitrosodi-n-propylamine		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
N-Nitrosodiphenylamine		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pentachlorophenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Phenanthrene	NE	NM	NM	0.11	0.087	NM	<	NM	NM	NM	<	<	<0.050	<0.050	<0.050
Phenol		NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Pyrene	2,300	NM	NM	0.079	<	<	<	<	<	<	<	<	<0.050	<0.050	<0.050

TABLE 4

SUMMARY OF GROUNDWATER RESULTS FROM INVESTIGATIVE MAY 2011 DRILLING
CITY OF TUCSON POLICE/FIRE FORMER FUELING FACILITY
TUCSON, ARIZONA

<i>Sample Location</i>	<i>Laboratory ID</i>	<i>Results (ug/L)</i>			
		<i>AWQS</i>	<i>Benzene</i>	<i>Toluene</i>	<i>Ethylbenzene</i>
		5	1,000	700	10,000
IW-1	GW-051711-MES-06	135	1,500	1,010	4,620
IW-2	GW-051811-MES-12	699	1,180	271	1,980
IW-4	GW-051811-MES-17	381	152	203	538
IW-5	GW-051911-MES-24	889	438	367	1,170
IW-3	GW-052011-MES-30	ND (0.500)	ND (2.0)	ND (2.0)	ND (1.0)
IW-6	GW-052011-MES-35	80.6	384	331	1,370

Notes:

µg/L = micrograms per liter

ND () = Not detected at the reporting limit in parenthesis

AWQS = Aquifer Water Quality Standards (AAC R18-11-101 et seq.). Arizona Department of Environmental Quality

(adopted January 4, 1990; amended August 14, 1992).

BOLD = Compound exceeds the AWQS

ATTACHMENT A

LABORATORY REPORTS

Analytical Report 417367
for
City of Tucson / Environmental Services

Project Manager: Richard Byrd

HQUST Site

055672.040

08-JUN-11

Collected By: Client



Celebrating 20 Years of commitment to excellence in Environmental Testing Services

3725 E. Atlanta Ave, Phoenix, AZ 85040

Ph: (602) 437-0330

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)

Xenco-Boca Raton (EPA Lab Code: FL01273):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):

Arizona(AZ0757), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

08-JUN-11

Project Manager: **Richard Byrd**
City of Tucson / Environmental Services
P.O. Box 27210
Tucson, AZ 85726

Reference: XENCO Report No: **417367**
HQUST Site
Project Address:

Richard Byrd:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 417367. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 417367 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



Skip Harden

Project Manager

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CASE NARRATIVE

Client Name: City of Tucson / Environmental Services

Project Name: HQUST Site

Project ID: 055672.040
Work Order Number: 417367

Report Date: 08-JUN-11
Date Received: 05/23/2011

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non nonformances and comments:

Batch: LBA-857319 Volatiles by SW 8260B

R2:

The RPD for Vinyl Acetate was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-858071 Volatiles by SW 8260B

N1:

Bromochloromethane, Bromomethane and Iodomethane recovered above acceptance criteria in the MSD and in at least one of the LCS/LCSD pair. This equates to a potential high bias. Since the associated filed samples were non-detect for these analytes, not further action was required.

Batch: LBA-858409 SVOCs by SW 8270C

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-858435 Volatiles by SW 8260B

Sample 417367-006 had a pH of 6.

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADEQ Arizona Data Qualifiers, Revision 3.0 9/20/2007. Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

- D1 Sample required dilution due to matrix.
- D2 Sample required dilution due to high concentration of target analyte.
- L1 The associated blank spike recovery was above laboratory acceptance limits.
- M1 Matrix spike recovery was high; the associated blank spike recovery was acceptable.
- M2 Matrix spike recovery was low; the associated blank spike recovery was acceptable.
- R2 RPD/RSD exceeded the laboratory acceptance limit. See case narrative.
- R5 MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
- S8 The analysis of the sample required a dilution such that the surrogate recovery calculation does not provide any useful information. The associated blank spike recovery was acceptable.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.



Sample Cross Reference 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
GW-052011-MES-30	W	May-20-11 07:20		417367-001
S-052011-MES-31	S	May-20-11 10:05		417367-002
S-052011-MES-32	S	May-20-11 10:15		417367-003
S-052011-MES-33	S	May-20-11 10:30		417367-004
S-052011-MES-34	S	May-20-11 10:40		417367-005
GW-052011-MES-35	W	May-20-11 10:40		417367-006
Trip Blank	W	May-20-11 07:20		417367-007



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-052011-MES-30	Matrix: Ground Water	Date Received: May-23-11 09:30
Lab Sample Id: 417367-001	Date Collected: May-20-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: Jun-01-11 18:56
Seq Number: 858433	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	06/02/11 01:11		1
Benzene	71-43-2	<0.500	0.500	ug/L	06/02/11 01:11		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	06/02/11 01:11		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	06/02/11 01:11		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	06/02/11 01:11		1
Bromoform	75-25-2	<1.00	1.00	ug/L	06/02/11 01:11		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	06/02/11 01:11		1
2-Butanone	78-93-3	<5.00	5.00	ug/L	06/02/11 01:11		1
n-Butylbenzene	104-51-8	<2.50	2.50	ug/L	06/02/11 01:11		1
Sec-Butylbenzene	135-98-8	<1.50	1.50	ug/L	06/02/11 01:11		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	06/02/11 01:11		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	06/02/11 01:11		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	06/02/11 01:11		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	06/02/11 01:11		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	06/02/11 01:11		1
Chloroform	67-66-3	<0.500	0.500	ug/L	06/02/11 01:11		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	06/02/11 01:11		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	06/02/11 01:11		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	06/02/11 01:11		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	06/02/11 01:11		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	06/02/11 01:11		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	06/02/11 01:11		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	06/02/11 01:11		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	06/02/11 01:11		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	06/02/11 01:11		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	06/02/11 01:11		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	06/02/11 01:11		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	06/02/11 01:11		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	06/02/11 01:11		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	06/02/11 01:11		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	06/02/11 01:11		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	06/02/11 01:11		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	06/02/11 01:11		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	06/02/11 01:11		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	06/02/11 01:11		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	06/02/11 01:11		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	06/02/11 01:11		1
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	06/02/11 01:11		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	06/02/11 01:11		1
Ethylbenzene	100-41-4	<2.00	2.00	ug/L	06/02/11 01:11		1



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-052011-MES-30	Matrix: Ground Water	Date Received: May-23-11 09:30
Lab Sample Id: 417367-001	Date Collected: May-20-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: Jun-01-11 18:56
Seq Number: 858433	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	06/02/11 01:11		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	06/02/11 01:11		1
Isopropylbenzene	98-82-8	<2.50	2.50	ug/L	06/02/11 01:11		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	06/02/11 01:11		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	06/02/11 01:11		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	06/02/11 01:11		1
MTBE	1634-04-4	<2.00	2.00	ug/L	06/02/11 01:11		1
Naphthalene	91-20-3	<5.00	5.00	ug/L	06/02/11 01:11		1
n-Propylbenzene	103-65-1	<2.00	2.00	ug/L	06/02/11 01:11		1
Styrene	100-42-5	<1.00	1.00	ug/L	06/02/11 01:11		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	06/02/11 01:11		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	06/02/11 01:11		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	06/02/11 01:11		1
Toluene	108-88-3	<2.00	2.00	ug/L	06/02/11 01:11		1
Total Trihalomethane		<0.500	0.500	ug/L	06/02/11 01:11		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	06/02/11 01:11		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	06/02/11 01:11		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	06/02/11 01:11		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	06/02/11 01:11		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	06/02/11 01:11		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	06/02/11 01:11		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	06/02/11 01:11		1
1,2,4-Trimethylbenzene	95-63-6	<2.00	2.00	ug/L	06/02/11 01:11		1
1,3,5-Trimethylbenzene	108-67-8	<1.50	1.50	ug/L	06/02/11 01:11		1
o-Xylene	95-47-6	<1.00	1.00	ug/L	06/02/11 01:11		1
m,p-Xylenes	179601-23-1	<2.00	2.00	ug/L	06/02/11 01:11		1
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	06/02/11 01:11		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	06/02/11 01:11		1
Total Xylenes	1330-20-7	<1.00	1.00	ug/L	06/02/11 01:11		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	103	%	70-135	06/02/11 01:11	
Dibromofluoromethane	1868-53-7	101	%	69-133	06/02/11 01:11	
1,2-Dichloroethane-D4	17060-07-0	91	%	66-139	06/02/11 01:11	
Toluene-D8	2037-26-5	91	%	70-130	06/02/11 01:11	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-31	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-002	Date Collected: May-20-11 10:05	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:05
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.22	1.22	mg/kg	05/26/11 00:02	M1	0.81
Benzene	71-43-2	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Bromobenzene	108-86-1	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Bromochloromethane	74-97-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Bromodichloromethane	75-27-4	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Bromoform	75-25-2	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81
Bromomethane	74-83-9	<0.405	0.405	mg/kg	05/26/11 00:02	M1	0.81
2-Butanone	78-93-3	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
tert-Butylbenzene	98-06-6	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Sec-Butylbenzene	135-98-8	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
n-Butylbenzene	104-51-8	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Carbon Disulfide	75-15-0	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Carbon Tetrachloride	56-23-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Chlorobenzene	108-90-7	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Chloroethane	75-00-3	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Chloroform	67-66-3	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Chloromethane	74-87-3	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
2-Chlorotoluene	95-49-8	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
4-Chlorotoluene	106-43-4	<0.203	0.203	mg/kg	05/26/11 00:02	M1	0.81
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,2-Dibromo-3-Chloropropane	96-12-8	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Dibromochloromethane	124-48-1	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,2-Dibromoethane	106-93-4	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Dibromomethane	74-95-3	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,2-Dichlorobenzene	95-50-1	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,3-Dichlorobenzene	541-73-1	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,4-Dichlorobenzene	106-46-7	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Dichlorodifluoromethane	75-71-8	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
1,2-Dichloroethane	107-06-2	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,1-Dichloroethane	75-34-3	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
trans-1,2-dichloroethene	156-60-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
cis-1,2-Dichloroethene	156-59-2	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,1-Dichloroethene	75-35-4	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81
2,2-Dichloropropane	594-20-7	<0.203	0.203	mg/kg	05/26/11 00:02	L1	0.81
1,3-Dichloropropane	142-28-9	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,2-Dichloropropane	78-87-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
trans-1,3-dichloropropene	10061-02-6	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,1-Dichloropropene	563-58-6	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
cis-1,3-Dichloropropene	10061-01-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Ethylbenzene	100-41-4	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-052011-MES-31	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-002	Date Collected: May-20-11 10:05	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:05
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
2-Hexanone	591-78-6	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Iodomethane (Methyl Iodide)	74-88-4	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
Isopropylbenzene	98-82-8	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Naphthalene	91-20-3	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Methylene Chloride	75-09-2	1.53	0.405	mg/kg	05/26/11 00:02		0.81
4-Methyl-2-Pentanone	108-10-1	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
MTBE	1634-04-4	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
n-Propylbenzene	103-65-1	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Styrene	100-42-5	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,1,1,2-Tetrachloroethane	630-20-6	<0.203	0.203	mg/kg	05/26/11 00:02	M1	0.81
1,1,2,2-Tetrachloroethane	79-34-5	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81
Tetrachloroethylene	127-18-4	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Toluene	108-88-3	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81
1,2,4-Trichlorobenzene	120-82-1	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,2,3-Trichlorobenzene	87-61-6	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,1,2-Trichloroethane	79-00-5	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
1,1,1-Trichloroethane	71-55-6	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Trichloroethene	79-01-6	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
Trichlorofluoromethane	75-69-4	<0.405	0.405	mg/kg	05/26/11 00:02	V1	0.81
1,2,3-Trichloropropane	96-18-4	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,2,4-Trimethylbenzene	95-63-6	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
1,3,5-Trimethylbenzene	108-67-8	<0.203	0.203	mg/kg	05/26/11 00:02		0.81
Vinyl Acetate	108-05-4	<0.405	0.405	mg/kg	05/26/11 00:02	M2	0.81
Vinyl Chloride	75-01-4	<0.405	0.405	mg/kg	05/26/11 00:02		0.81
o-Xylene	95-47-6	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81
m,p-Xylenes	179601-23-1	<0.0810	0.0810	mg/kg	05/26/11 00:02		0.81
Total Xylenes	1330-20-7	<0.0405	0.0405	mg/kg	05/26/11 00:02		0.81

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	62-123	05/26/11 00:02	
Dibromofluoromethane	1868-53-7	100	%	52-140	05/26/11 00:02	
1,2-Dichloroethane-D4	17060-07-0	105	%	54-133	05/26/11 00:02	
Toluene-D8	2037-26-5	102	%	63-126	05/26/11 00:02	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-052011-MES-31	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-002	Date Collected: May-20-11 10:05	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Acenaphthylene	208-96-8	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Anthracene	120-12-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Azobenzene	103-33-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Benzo(a)anthracene	56-55-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1L1	2
Benzo(a)pyrene	50-32-8	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Benzo(b)fluoranthene	205-99-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Benzo(g,h,i)perylene	191-24-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Benzo(k)fluoranthene	207-08-9	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Benzoic Acid	65-85-0	<10.0	10.0	mg/kg	06/01/11 23:04	D1M2	2
Benzyl Alcohol	100-51-6	<0.660	0.660	mg/kg	06/01/11 23:04	D1M2	2
Benzyl Butyl Phthalate	85-68-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1L1	2
bis(2-chloroethoxy) methane	111-91-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
bis(2-chloroethyl) ether	111-44-4	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
bis(2-chloroisopropyl) ether	108-60-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
bis(2-ethylhexyl) phthalate	117-81-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
4-Bromophenyl-phenylether	101-55-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
di-n-Butyl Phthalate	84-74-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
4-chloro-3-methylphenol	59-50-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
4-Chloroaniline	106-47-8	<2.00	2.00	mg/kg	06/01/11 23:04	D1	2
2-Chloronaphthalene	91-58-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
2-Chlorophenol	95-57-8	<0.660	0.660	mg/kg	06/01/11 23:04	D1M2	2
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Chrysene	218-01-9	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Dibenz(a,h)Anthracene	53-70-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Dibenzofuran	132-64-9	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
1,2-Dichlorobenzene	95-50-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
1,3-Dichlorobenzene	541-73-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
1,4-Dichlorobenzene	106-46-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
3,3-Dichlorobenzidine	91-94-1	<3.40	3.40	mg/kg	06/01/11 23:04	D1	2
2,4-Dichlorophenol	120-83-2	<1.00	1.00	mg/kg	06/01/11 23:04	D1M2	2
Diethyl Phthalate	84-66-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Dimethyl Phthalate	131-11-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
2,4-Dimethylphenol	105-67-9	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
4,6-dinitro-2-methyl phenol	534-52-1	<4.00	4.00	mg/kg	06/01/11 23:04	D1M2	2
2,4-Dinitrophenol	51-28-5	<4.00	4.00	mg/kg	06/01/11 23:04	D1	2
2,4-Dinitrotoluene	121-14-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
2,6-Dinitrotoluene	606-20-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Fluoranthene	206-44-0	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Fluorene	86-73-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-31	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-002	Date Collected: May-20-11 10:05	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Hexachlorobutadiene	87-68-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Hexachlorocyclopentadiene	77-47-4	<4.00	4.00	mg/kg	06/01/11 23:04	D1	2
Hexachloroethane	67-72-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Isophorone	78-59-1	<0.660	0.660	mg/kg	06/01/11 23:04	D1L1	2
2-Methylnaphthalene	91-57-6	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
2-methylphenol	95-48-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
3&4-Methylphenol		<1.00	1.00	mg/kg	06/01/11 23:04	D1	2
Naphthalene	91-20-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Nitrobenzene	98-95-3	<0.660	0.660	mg/kg	06/01/11 23:04	D1M2	2
2-Nitrophenol	88-75-5	<0.660	0.660	mg/kg	06/01/11 23:04	D1M2	2
4-Nitrophenol	100-02-7	<4.00	4.00	mg/kg	06/01/11 23:04	D1M2	2
N-Nitrosodi-n-Propylamine	621-64-7	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
N-Nitrosodiphenylamine	86-30-6	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
di-n-Octyl Phthalate	117-84-0	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Pentachlorophenol	87-86-5	<1.34	1.34	mg/kg	06/01/11 23:04	D1	2
Phenanthrene	85-01-8	<0.660	0.660	mg/kg	06/01/11 23:04	D1	2
Phenol	108-95-2	<0.660	0.660	mg/kg	06/01/11 23:04	D1M2	2
Pyrene	129-00-0	<0.660	0.660	mg/kg	06/01/11 23:04	D1L1	2
1,2,4-Trichlorobenzene	120-82-1	<1.00	1.00	mg/kg	06/01/11 23:04	D1	2
2,4,6-Trichlorophenol	88-06-2	<2.00	2.00	mg/kg	06/01/11 23:04	D1M2	2

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	53	%	44-103	06/01/11 23:04	
2-Fluorophenol	367-12-4	48	%	15-111	06/01/11 23:04	
Nitrobenzene-d5	4165-60-0	48	%	45-109	06/01/11 23:04	
Phenol-d6	13127-88-3	54	%	37-105	06/01/11 23:04	
Terphenyl-D14	1718-51-0	81	%	41-118	06/01/11 23:04	
2,4,6-Tribromophenol	118-79-6	49	%	10-124	06/01/11 23:04	
2-Chlorophenol-D4	93951-73-6	51	%	24-110	06/01/11 23:04	
1,2-Dichlorobenzene-D4	2199-69-1	56	%	38-102	06/01/11 23:04	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-32	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-003	Date Collected: May-20-11 10:15	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:15
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.53	1.53	mg/kg	05/26/11 00:29		1.02
Benzene	71-43-2	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Bromobenzene	108-86-1	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Bromochloromethane	74-97-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Bromodichloromethane	75-27-4	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Bromoform	75-25-2	<0.102	0.102	mg/kg	05/26/11 00:29		1.02
Bromomethane	74-83-9	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
2-Butanone	78-93-3	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
tert-Butylbenzene	98-06-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Sec-Butylbenzene	135-98-8	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
n-Butylbenzene	104-51-8	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Carbon Disulfide	75-15-0	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Carbon Tetrachloride	56-23-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Chlorobenzene	108-90-7	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Chloroethane	75-00-3	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Chloroform	67-66-3	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Chloromethane	74-87-3	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
2-Chlorotoluene	95-49-8	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
4-Chlorotoluene	106-43-4	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,2-Dibromo-3-Chloropropane	96-12-8	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Dibromochloromethane	124-48-1	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,2-Dibromoethane	106-93-4	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Dibromomethane	74-95-3	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,2-Dichlorobenzene	95-50-1	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,3-Dichlorobenzene	541-73-1	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,4-Dichlorobenzene	106-46-7	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Dichlorodifluoromethane	75-71-8	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
1,2-Dichloroethane	107-06-2	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,1-Dichloroethane	75-34-3	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
trans-1,2-dichloroethene	156-60-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
cis-1,2-Dichloroethene	156-59-2	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,1-Dichloroethene	75-35-4	<0.102	0.102	mg/kg	05/26/11 00:29		1.02
2,2-Dichloropropane	594-20-7	<0.255	0.255	mg/kg	05/26/11 00:29	L1	1.02
1,3-Dichloropropane	142-28-9	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,2-Dichloropropane	78-87-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
trans-1,3-dichloropropene	10061-02-6	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,1-Dichloropropene	563-58-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
cis-1,3-Dichloropropene	10061-01-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Ethylbenzene	100-41-4	<0.102	0.102	mg/kg	05/26/11 00:29		1.02



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-32	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-003	Date Collected: May-20-11 10:15	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:15
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
2-Hexanone	591-78-6	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Iodomethane (Methyl Iodide)	74-88-4	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Naphthalene	91-20-3	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Isopropylbenzene	98-82-8	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Methylene Chloride	75-09-2	1.82	0.510	mg/kg	05/26/11 00:29		1.02
4-Methyl-2-Pentanone	108-10-1	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
MTBE	1634-04-4	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
n-Propylbenzene	103-65-1	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Styrene	100-42-5	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,1,1,2-Tetrachloroethane	630-20-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,1,2,2-Tetrachloroethane	79-34-5	<0.102	0.102	mg/kg	05/26/11 00:29		1.02
Tetrachloroethylene	127-18-4	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Toluene	108-88-3	<0.102	0.102	mg/kg	05/26/11 00:29		1.02
1,2,4-Trichlorobenzene	120-82-1	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,2,3-Trichlorobenzene	87-61-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,1,2-Trichloroethane	79-00-5	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
1,1,1-Trichloroethane	71-55-6	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Trichloroethene	79-01-6	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
Trichlorofluoromethane	75-69-4	<0.510	0.510	mg/kg	05/26/11 00:29	V1	1.02
1,2,3-Trichloropropane	96-18-4	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,2,4-Trimethylbenzene	95-63-6	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
1,3,5-Trimethylbenzene	108-67-8	<0.255	0.255	mg/kg	05/26/11 00:29		1.02
Vinyl Acetate	108-05-4	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
Vinyl Chloride	75-01-4	<0.510	0.510	mg/kg	05/26/11 00:29		1.02
o-Xylene	95-47-6	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02
m,p-Xylenes	179601-23-1	<0.102	0.102	mg/kg	05/26/11 00:29		1.02
Total Xylenes	1330-20-7	<0.0510	0.0510	mg/kg	05/26/11 00:29		1.02

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	96	%	62-123	05/26/11 00:29	
Dibromofluoromethane	1868-53-7	90	%	52-140	05/26/11 00:29	
1,2-Dichloroethane-D4	17060-07-0	102	%	54-133	05/26/11 00:29	
Toluene-D8	2037-26-5	94	%	63-126	05/26/11 00:29	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-32	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-003	Date Collected: May-20-11 10:15	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	06/01/11 22:10		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	06/01/11 22:10		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	06/01/11 22:10	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	06/01/11 22:10		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	06/01/11 22:10		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	06/01/11 22:10	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	06/01/11 22:10		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	06/01/11 22:10		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	06/01/11 22:10		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	06/01/11 22:10		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	06/01/11 22:10		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	06/01/11 22:10		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	06/01/11 22:10		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	06/01/11 22:10		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	06/01/11 22:10		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	06/01/11 22:10		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	06/01/11 22:10		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	06/01/11 22:10		1



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-32	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-003	Date Collected: May-20-11 10:15	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	06/01/11 22:10		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	06/01/11 22:10		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	06/01/11 22:10		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	06/01/11 22:10	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	06/01/11 22:10		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
3&4-Methylphenol		<0.500	0.500	mg/kg	06/01/11 22:10		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	06/01/11 22:10		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	06/01/11 22:10		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	06/01/11 22:10		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	06/01/11 22:10		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	06/01/11 22:10		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	06/01/11 22:10		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	06/01/11 22:10		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	06/01/11 22:10		1
Phenol	108-95-2	<0.330	0.330	mg/kg	06/01/11 22:10		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	06/01/11 22:10	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	06/01/11 22:10		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	06/01/11 22:10		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	72	%	44-103	06/01/11 22:10	
2-Fluorophenol	367-12-4	59	%	15-111	06/01/11 22:10	
Nitrobenzene-d5	4165-60-0	60	%	45-109	06/01/11 22:10	
Phenol-d6	13127-88-3	64	%	37-105	06/01/11 22:10	
Terphenyl-D14	1718-51-0	89	%	41-118	06/01/11 22:10	
2,4,6-Tribromophenol	118-79-6	55	%	10-124	06/01/11 22:10	
2-Chlorophenol-D4	93951-73-6	65	%	24-110	06/01/11 22:10	
1,2-Dichlorobenzene-D4	2199-69-1	64	%	38-102	06/01/11 22:10	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-33	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-004	Date Collected: May-20-11 10:30	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:30
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.71	1.71	mg/kg	05/26/11 00:55		1.14
Benzene	71-43-2	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Bromobenzene	108-86-1	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Bromochloromethane	74-97-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Bromodichloromethane	75-27-4	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Bromoform	75-25-2	<0.114	0.114	mg/kg	05/26/11 00:55		1.14
Bromomethane	74-83-9	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
2-Butanone	78-93-3	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
tert-Butylbenzene	98-06-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Sec-Butylbenzene	135-98-8	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
n-Butylbenzene	104-51-8	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Carbon Disulfide	75-15-0	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Carbon Tetrachloride	56-23-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Chlorobenzene	108-90-7	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Chloroethane	75-00-3	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Chloroform	67-66-3	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Chloromethane	74-87-3	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
2-Chlorotoluene	95-49-8	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
4-Chlorotoluene	106-43-4	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,2-Dibromo-3-Chloropropane	96-12-8	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Dibromochloromethane	124-48-1	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,2-Dibromoethane	106-93-4	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Dibromomethane	74-95-3	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,2-Dichlorobenzene	95-50-1	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,3-Dichlorobenzene	541-73-1	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,4-Dichlorobenzene	106-46-7	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Dichlorodifluoromethane	75-71-8	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
1,2-Dichloroethane	107-06-2	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,1-Dichloroethane	75-34-3	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
trans-1,2-dichloroethene	156-60-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
cis-1,2-Dichloroethene	156-59-2	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,1-Dichloroethene	75-35-4	<0.114	0.114	mg/kg	05/26/11 00:55		1.14
2,2-Dichloropropane	594-20-7	<0.285	0.285	mg/kg	05/26/11 00:55	L1	1.14
1,3-Dichloropropane	142-28-9	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,2-Dichloropropane	78-87-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
trans-1,3-dichloropropene	10061-02-6	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,1-Dichloropropene	563-58-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
cis-1,3-Dichloropropene	10061-01-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Ethylbenzene	100-41-4	<0.114	0.114	mg/kg	05/26/11 00:55		1.14



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-33	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-004	Date Collected: May-20-11 10:30	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:30
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
2-Hexanone	591-78-6	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Iodomethane (Methyl Iodide)	74-88-4	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Naphthalene	91-20-3	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Isopropylbenzene	98-82-8	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Methylene Chloride	75-09-2	2.08	0.571	mg/kg	05/26/11 00:55		1.14
4-Methyl-2-Pentanone	108-10-1	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
MTBE	1634-04-4	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
n-Propylbenzene	103-65-1	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Styrene	100-42-5	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,1,1,2-Tetrachloroethane	630-20-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,1,2,2-Tetrachloroethane	79-34-5	<0.114	0.114	mg/kg	05/26/11 00:55		1.14
Tetrachloroethylene	127-18-4	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Toluene	108-88-3	<0.114	0.114	mg/kg	05/26/11 00:55		1.14
1,2,4-Trichlorobenzene	120-82-1	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,2,3-Trichlorobenzene	87-61-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,1,2-Trichloroethane	79-00-5	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
1,1,1-Trichloroethane	71-55-6	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Trichloroethene	79-01-6	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
Trichlorofluoromethane	75-69-4	<0.571	0.571	mg/kg	05/26/11 00:55	V1	1.14
1,2,3-Trichloropropane	96-18-4	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,2,4-Trimethylbenzene	95-63-6	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
1,3,5-Trimethylbenzene	108-67-8	<0.285	0.285	mg/kg	05/26/11 00:55		1.14
Vinyl Acetate	108-05-4	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
Vinyl Chloride	75-01-4	<0.571	0.571	mg/kg	05/26/11 00:55		1.14
o-Xylene	95-47-6	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14
m,p-Xylenes	179601-23-1	<0.114	0.114	mg/kg	05/26/11 00:55		1.14
Total Xylenes	1330-20-7	<0.0571	0.0571	mg/kg	05/26/11 00:55		1.14

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	62-123	05/26/11 00:55	
Dibromofluoromethane	1868-53-7	104	%	52-140	05/26/11 00:55	
1,2-Dichloroethane-D4	17060-07-0	114	%	54-133	05/26/11 00:55	
Toluene-D8	2037-26-5	103	%	63-126	05/26/11 00:55	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-052011-MES-33	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-004	Date Collected: May-20-11 10:30	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	06/02/11 22:09		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	06/02/11 22:09		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	06/02/11 22:09	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	06/02/11 22:09		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	06/02/11 22:09		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	06/02/11 22:09	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	06/02/11 22:09		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	06/02/11 22:09		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	06/02/11 22:09		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	06/02/11 22:09		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	06/02/11 22:09		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	06/02/11 22:09		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	06/02/11 22:09		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	06/02/11 22:09		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	06/02/11 22:09		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	06/02/11 22:09		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	06/02/11 22:09		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	06/02/11 22:09		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-33	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-004	Date Collected: May-20-11 10:30	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	06/02/11 22:09		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	06/02/11 22:09		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	06/02/11 22:09		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	06/02/11 22:09	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	06/02/11 22:09		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
3&4-Methylphenol		<0.500	0.500	mg/kg	06/02/11 22:09		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	06/02/11 22:09		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	06/02/11 22:09		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	06/02/11 22:09		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	06/02/11 22:09		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	06/02/11 22:09		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	06/02/11 22:09		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	06/02/11 22:09		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	06/02/11 22:09		1
Phenol	108-95-2	<0.330	0.330	mg/kg	06/02/11 22:09		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	06/02/11 22:09	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	06/02/11 22:09		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	06/02/11 22:09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	60	%	44-103	06/02/11 22:09	
2-Fluorophenol	367-12-4	62	%	15-111	06/02/11 22:09	
Nitrobenzene-d5	4165-60-0	65	%	45-109	06/02/11 22:09	
Phenol-d6	13127-88-3	68	%	37-105	06/02/11 22:09	
Terphenyl-D14	1718-51-0	86	%	41-118	06/02/11 22:09	
2,4,6-Tribromophenol	118-79-6	62	%	10-124	06/02/11 22:09	
2-Chlorophenol-D4	93951-73-6	63	%	24-110	06/02/11 22:09	
1,2-Dichlorobenzene-D4	2199-69-1	56	%	38-102	06/02/11 22:09	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-34	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-005	Date Collected: May-20-11 10:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:40
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.36	1.36	mg/kg	05/26/11 01:22		0.91
Benzene	71-43-2	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Bromobenzene	108-86-1	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Bromochloromethane	74-97-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Bromodichloromethane	75-27-4	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Bromoform	75-25-2	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91
Bromomethane	74-83-9	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
2-Butanone	78-93-3	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
tert-Butylbenzene	98-06-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Sec-Butylbenzene	135-98-8	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
n-Butylbenzene	104-51-8	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Carbon Disulfide	75-15-0	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Carbon Tetrachloride	56-23-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Chlorobenzene	108-90-7	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Chloroethane	75-00-3	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Chloroform	67-66-3	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Chloromethane	74-87-3	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
2-Chlorotoluene	95-49-8	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
4-Chlorotoluene	106-43-4	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,2-Dibromo-3-Chloropropane	96-12-8	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Dibromochloromethane	124-48-1	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,2-Dibromoethane	106-93-4	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Dibromomethane	74-95-3	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,2-Dichlorobenzene	95-50-1	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,3-Dichlorobenzene	541-73-1	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,4-Dichlorobenzene	106-46-7	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Dichlorodifluoromethane	75-71-8	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
1,2-Dichloroethane	107-06-2	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,1-Dichloroethane	75-34-3	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
trans-1,2-dichloroethene	156-60-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
cis-1,2-Dichloroethene	156-59-2	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,1-Dichloroethene	75-35-4	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91
2,2-Dichloropropane	594-20-7	<0.227	0.227	mg/kg	05/26/11 01:22	L1	0.91
1,3-Dichloropropane	142-28-9	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,2-Dichloropropane	78-87-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
trans-1,3-dichloropropene	10061-02-6	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,1-Dichloropropene	563-58-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
cis-1,3-Dichloropropene	10061-01-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Ethylbenzene	100-41-4	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-052011-MES-34	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-005	Date Collected: May-20-11 10:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-20-11 10:40
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
2-Hexanone	591-78-6	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Iodomethane (Methyl Iodide)	74-88-4	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Naphthalene	91-20-3	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Isopropylbenzene	98-82-8	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Methylene Chloride	75-09-2	1.95	0.454	mg/kg	05/26/11 01:22		0.91
4-Methyl-2-Pentanone	108-10-1	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
MTBE	1634-04-4	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
n-Propylbenzene	103-65-1	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Styrene	100-42-5	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,1,1,2-Tetrachloroethane	630-20-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,1,2,2-Tetrachloroethane	79-34-5	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91
Tetrachloroethylene	127-18-4	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Toluene	108-88-3	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91
1,2,4-Trichlorobenzene	120-82-1	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,2,3-Trichlorobenzene	87-61-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,1,2-Trichloroethane	79-00-5	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
1,1,1-Trichloroethane	71-55-6	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Trichloroethene	79-01-6	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
Trichlorofluoromethane	75-69-4	<0.454	0.454	mg/kg	05/26/11 01:22	V1	0.91
1,2,3-Trichloropropane	96-18-4	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,2,4-Trimethylbenzene	95-63-6	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
1,3,5-Trimethylbenzene	108-67-8	<0.227	0.227	mg/kg	05/26/11 01:22		0.91
Vinyl Acetate	108-05-4	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
Vinyl Chloride	75-01-4	<0.454	0.454	mg/kg	05/26/11 01:22		0.91
o-Xylene	95-47-6	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91
m,p-Xylenes	179601-23-1	<0.0907	0.0907	mg/kg	05/26/11 01:22		0.91
Total Xylenes	1330-20-7	<0.0454	0.0454	mg/kg	05/26/11 01:22		0.91

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	62-123	05/26/11 01:22	
Dibromofluoromethane	1868-53-7	95	%	52-140	05/26/11 01:22	
1,2-Dichloroethane-D4	17060-07-0	109	%	54-133	05/26/11 01:22	
Toluene-D8	2037-26-5	99	%	63-126	05/26/11 01:22	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-052011-MES-34	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-005	Date Collected: May-20-11 10:40	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	06/02/11 23:03		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	06/02/11 23:03		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	06/02/11 23:03	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	06/02/11 23:03		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	06/02/11 23:03		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	06/02/11 23:03	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	06/02/11 23:03		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	06/02/11 23:03		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	06/02/11 23:03		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	06/02/11 23:03		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	06/02/11 23:03		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	06/02/11 23:03		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	06/02/11 23:03		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	06/02/11 23:03		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	06/02/11 23:03		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	06/02/11 23:03		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	06/02/11 23:03		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	06/02/11 23:03		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-052011-MES-34	Matrix: Soil	Date Received: May-23-11 09:30
Lab Sample Id: 417367-005	Date Collected: May-20-11 10:40	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	06/02/11 23:03		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	06/02/11 23:03		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	06/02/11 23:03		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	06/02/11 23:03	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	06/02/11 23:03		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
3&4-Methylphenol		<0.500	0.500	mg/kg	06/02/11 23:03		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	06/02/11 23:03		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	06/02/11 23:03		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	06/02/11 23:03		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	06/02/11 23:03		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	06/02/11 23:03		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	06/02/11 23:03		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	06/02/11 23:03		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	06/02/11 23:03		1
Phenol	108-95-2	<0.330	0.330	mg/kg	06/02/11 23:03		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	06/02/11 23:03	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	06/02/11 23:03		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	06/02/11 23:03		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	72	%	44-103	06/02/11 23:03	
2-Fluorophenol	367-12-4	72	%	15-111	06/02/11 23:03	
Nitrobenzene-d5	4165-60-0	72	%	45-109	06/02/11 23:03	
Phenol-d6	13127-88-3	79	%	37-105	06/02/11 23:03	
Terphenyl-D14	1718-51-0	91	%	41-118	06/02/11 23:03	
2,4,6-Tribromophenol	118-79-6	60	%	10-124	06/02/11 23:03	
2-Chlorophenol-D4	93951-73-6	72	%	24-110	06/02/11 23:03	
1,2-Dichlorobenzene-D4	2199-69-1	65	%	38-102	06/02/11 23:03	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-052011-MES-35	Matrix: Ground Water	Date Received: May-23-11 09:30
Lab Sample Id: 417367-006	Date Collected: May-20-11 10:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-31-11 19:41
Seq Number: 858435	
Dilution Analysis:	
Seq#: 858433 Date Analyzed: 06/02/11 03:28 Date Prep: 06/01/11 18:56	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	25.5	20.0	ug/L	06/01/11 05:30		1
Benzene	71-43-2	80.6	0.500	ug/L	06/01/11 05:30		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	06/01/11 05:30		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	06/01/11 05:30		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	06/01/11 05:30		1
Bromoform	75-25-2	<1.00	1.00	ug/L	06/01/11 05:30		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	06/01/11 05:30		1
2-Butanone	78-93-3	15.6	5.00	ug/L	06/01/11 05:30		1
n-Butylbenzene	104-51-8	37.5	2.50	ug/L	06/01/11 05:30		1
Sec-Butylbenzene	135-98-8	13.9	1.50	ug/L	06/01/11 05:30		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	06/01/11 05:30		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	06/01/11 05:30		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	06/01/11 05:30		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	06/01/11 05:30		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	06/01/11 05:30		1
Chloroform	67-66-3	<0.500	0.500	ug/L	06/01/11 05:30		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	06/01/11 05:30		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	06/01/11 05:30		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	06/01/11 05:30		1
4-Isopropyltoluene	99-87-6	6.28	1.50	ug/L	06/01/11 05:30		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	06/01/11 05:30		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	06/01/11 05:30		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	06/01/11 05:30		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	06/01/11 05:30		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	06/01/11 05:30		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	06/01/11 05:30		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	06/01/11 05:30		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	06/01/11 05:30		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	06/01/11 05:30		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	06/01/11 05:30		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	06/01/11 05:30		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	06/01/11 05:30		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	06/01/11 05:30		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	06/01/11 05:30		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	06/01/11 05:30		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	06/01/11 05:30		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	06/01/11 05:30		1



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: GW-052011-MES-35	Matrix: Ground Water	Date Received: May-23-11 09:30
Lab Sample Id: 417367-006	Date Collected: May-20-11 10:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-31-11 19:41
Seq Number: 858435	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	06/01/11 05:30		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	06/01/11 05:30		1
Ethylbenzene	100-41-4	331	20.0	ug/L	06/02/11 03:28	D2	10
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	06/01/11 05:30		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	06/01/11 05:30		1
Isopropylbenzene	98-82-8	46.0	2.50	ug/L	06/01/11 05:30		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	06/01/11 05:30		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	06/01/11 05:30		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	06/01/11 05:30		1
MTBE	1634-04-4	<2.00	2.00	ug/L	06/01/11 05:30		1
Naphthalene	91-20-3	185	50.0	ug/L	06/02/11 03:28	D2	10
n-Propylbenzene	103-65-1	109	20.0	ug/L	06/02/11 03:28	D2	10
Styrene	100-42-5	<1.00	1.00	ug/L	06/01/11 05:30		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	06/01/11 05:30		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	06/01/11 05:30		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	06/01/11 05:30		1
Toluene	108-88-3	384	20.0	ug/L	06/02/11 03:28	D2	10
Total Trihalomethane		<0.500	0.500	ug/L	06/01/11 05:30		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	06/01/11 05:30		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	06/01/11 05:30		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	06/01/11 05:30		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	06/01/11 05:30		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	06/01/11 05:30		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	06/01/11 05:30		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	06/01/11 05:30		1
1,2,4-Trimethylbenzene	95-63-6	708	20.0	ug/L	06/02/11 03:28	D2	10
1,3,5-Trimethylbenzene	108-67-8	206	15.0	ug/L	06/02/11 03:28	D2	10
o-Xylene	95-47-6	450	10.0	ug/L	06/02/11 03:28	D2	10
m,p-Xylenes	179601-23-1	917	20.0	ug/L	06/02/11 03:28	D2	10
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	06/01/11 05:30		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	06/01/11 05:30		1
Total Xylenes	1330-20-7	1370	10.0	ug/L	06/02/11 03:28	D2	10

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	115	%	70-135	06/01/11 05:30	
Dibromofluoromethane	1868-53-7	108	%	69-133	06/01/11 05:30	
1,2-Dichloroethane-D4	17060-07-0	97	%	66-139	06/01/11 05:30	
Toluene-D8	2037-26-5	85	%	70-130	06/01/11 05:30	



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-23-11 09:30
Lab Sample Id: 417367-007	Date Collected: May-20-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-28-11 20:33
Seq Number: 858071	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	05/29/11 01:39		1
Benzene	71-43-2	<0.500	0.500	ug/L	05/29/11 01:39		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/29/11 01:39		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/29/11 01:39	L1	1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/29/11 01:39	L1	1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/29/11 01:39		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/29/11 01:39	L1	1
2-Butanone	78-93-3	<5.00	5.00	ug/L	05/29/11 01:39		1
n-Butylbenzene	104-51-8	<2.50	2.50	ug/L	05/29/11 01:39		1
Sec-Butylbenzene	135-98-8	<1.50	1.50	ug/L	05/29/11 01:39		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/29/11 01:39		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	05/29/11 01:39	L1	1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/29/11 01:39		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/29/11 01:39		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/29/11 01:39		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/29/11 01:39		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/29/11 01:39		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/29/11 01:39		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/29/11 01:39		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	05/29/11 01:39		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/29/11 01:39		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/29/11 01:39		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/29/11 01:39		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/29/11 01:39		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/29/11 01:39		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/29/11 01:39		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/29/11 01:39		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/29/11 01:39		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/29/11 01:39		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	05/29/11 01:39		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/29/11 01:39		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/29/11 01:39		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/29/11 01:39		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/29/11 01:39		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/29/11 01:39		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/29/11 01:39		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/29/11 01:39		1
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/29/11 01:39		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/29/11 01:39		1
Ethylbenzene	100-41-4	<2.00	2.00	ug/L	05/29/11 01:39		1



Certificate of Analytical Results 417367

City of Tucson / Environmental Services, Tucson, AZ HQUEST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-23-11 09:30
Lab Sample Id: 417367-007	Date Collected: May-20-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-28-11 20:33
Seq Number: 858071	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/29/11 01:39		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	05/29/11 01:39		1
Isopropylbenzene	98-82-8	<2.50	2.50	ug/L	05/29/11 01:39		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/29/11 01:39		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/29/11 01:39	L1	1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/29/11 01:39		1
MTBE	1634-04-4	<2.00	2.00	ug/L	05/29/11 01:39		1
Naphthalene	91-20-3	<5.00	5.00	ug/L	05/29/11 01:39		1
n-Propylbenzene	103-65-1	<2.00	2.00	ug/L	05/29/11 01:39		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/29/11 01:39		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/29/11 01:39		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/29/11 01:39		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/29/11 01:39		1
Toluene	108-88-3	<2.00	2.00	ug/L	05/29/11 01:39		1
Total Trihalomethane		<0.500	0.500	ug/L	05/29/11 01:39		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/29/11 01:39		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/29/11 01:39		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/29/11 01:39		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/29/11 01:39		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/29/11 01:39		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/29/11 01:39		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/29/11 01:39		1
1,2,4-Trimethylbenzene	95-63-6	<2.00	2.00	ug/L	05/29/11 01:39		1
1,3,5-Trimethylbenzene	108-67-8	<1.50	1.50	ug/L	05/29/11 01:39		1
o-Xylene	95-47-6	<1.00	1.00	ug/L	05/29/11 01:39		1
m,p-Xylenes	179601-23-1	<2.00	2.00	ug/L	05/29/11 01:39		1
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/29/11 01:39		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/29/11 01:39		1
Total Xylenes	1330-20-7	<1.00	1.00	ug/L	05/29/11 01:39		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	114	%	70-135	05/29/11 01:39	
Dibromofluoromethane	1868-53-7	112	%	69-133	05/29/11 01:39	
1,2-Dichloroethane-D4	17060-07-0	110	%	66-139	05/29/11 01:39	
Toluene-D8	2037-26-5	78	%	70-130	05/29/11 01:39	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603968-1-BLK

Seq Number: 858071

Prep Date: 05/28/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	110	70-135	%	05/28/2011 21:52	
Dibromofluoromethane	107	69-133	%	05/28/2011 21:52	
1,2-Dichloroethane-D4	104	66-139	%	05/28/2011 21:52	
Toluene-D8	79	70-130	%	05/28/2011 21:52	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603968-1-BKS

Seq Number: 858071

Prep Date: 05/28/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	115	70-135	%	05/28/2011 23:00	
Dibromofluoromethane	108	69-133	%	05/28/2011 23:00	
1,2-Dichloroethane-D4	104	66-139	%	05/28/2011 23:00	
Toluene-D8	80	70-130	%	05/28/2011 23:00	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603968-1-BSD

Seq Number: 858071

Prep Date: 05/28/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	115	70-135	%	05/28/2011 23:23	
Dibromofluoromethane	109	69-133	%	05/28/2011 23:23	
1,2-Dichloroethane-D4	104	66-139	%	05/28/2011 23:23	
Toluene-D8	79	70-130	%	05/28/2011 23:23	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 417856-002 S

Seq Number: 858071

Prep Date: 05/28/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	114	70-135	%	05/28/2011 23:45	
Dibromofluoromethane	108	69-133	%	05/28/2011 23:45	
1,2-Dichloroethane-D4	104	66-139	%	05/28/2011 23:45	
Toluene-D8	79	70-130	%	05/28/2011 23:45	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 417856-002 SD

Seq Number: 858071

Prep Date: 05/28/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	118	70-135	%	05/29/2011 00:08	
Dibromofluoromethane	108	69-133	%	05/29/2011 00:08	
1,2-Dichloroethane-D4	103	66-139	%	05/29/2011 00:08	
Toluene-D8	80	70-130	%	05/29/2011 00:08	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604189-1-BLK

Seq Number: 858433

Prep Date: 06/01/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	108	70-135	%	06/01/2011 20:17	
Dibromofluoromethane	108	69-133	%	06/01/2011 20:17	
1,2-Dichloroethane-D4	94	66-139	%	06/01/2011 20:17	
Toluene-D8	85	70-130	%	06/01/2011 20:17	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604189-1-BKS

Seq Number: 858433

Prep Date: 06/01/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	107	70-135	%	06/01/2011 21:47	
Dibromofluoromethane	99	69-133	%	06/01/2011 21:47	
1,2-Dichloroethane-D4	88	66-139	%	06/01/2011 21:47	
Toluene-D8	92	70-130	%	06/01/2011 21:47	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604189-1-BSD

Seq Number: 858433

Prep Date: 06/01/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	06/01/2011 22:10	
Dibromofluoromethane	98	69-133	%	06/01/2011 22:10	
1,2-Dichloroethane-D4	87	66-139	%	06/01/2011 22:10	
Toluene-D8	92	70-130	%	06/01/2011 22:10	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 417856-002 S

Seq Number: 858433

Prep Date: 06/01/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	107	70-135	%	06/01/2011 22:32	
Dibromofluoromethane	98	69-133	%	06/01/2011 22:32	
1,2-Dichloroethane-D4	86	66-139	%	06/01/2011 22:32	
Toluene-D8	88	70-130	%	06/01/2011 22:32	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 417856-002 SD

Seq Number: 858433

Prep Date: 06/01/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	108	70-135	%	06/01/2011 22:55	
Dibromofluoromethane	97	69-133	%	06/01/2011 22:55	
1,2-Dichloroethane-D4	86	66-139	%	06/01/2011 22:55	
Toluene-D8	91	70-130	%	06/01/2011 22:55	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604190-1-BLK

Seq Number: 858435

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	105	70-135	%	05/31/2011 20:49	
Dibromofluoromethane	97	69-133	%	05/31/2011 20:49	
1,2-Dichloroethane-D4	87	66-139	%	05/31/2011 20:49	
Toluene-D8	90	70-130	%	05/31/2011 20:49	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604190-1-BKS

Seq Number: 858435

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	111	70-135	%	05/31/2011 21:56	
Dibromofluoromethane	105	69-133	%	05/31/2011 21:56	
1,2-Dichloroethane-D4	91	66-139	%	05/31/2011 21:56	
Toluene-D8	86	70-130	%	05/31/2011 21:56	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 604190-1-BSD

Seq Number: 858435

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	111	70-135	%	05/31/2011 22:19	
Dibromofluoromethane	104	69-133	%	05/31/2011 22:19	
1,2-Dichloroethane-D4	91	66-139	%	05/31/2011 22:19	
Toluene-D8	85	70-130	%	05/31/2011 22:19	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417793-006 S

Seq Number: 858435

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	111	70-135	%	05/31/2011 22:42	
Dibromofluoromethane	104	69-133	%	05/31/2011 22:42	
1,2-Dichloroethane-D4	90	66-139	%	05/31/2011 22:42	
Toluene-D8	86	70-130	%	05/31/2011 22:42	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417793-006 SD

Seq Number: 858435

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	111	70-135	%	05/31/2011 23:04	
Dibromofluoromethane	103	69-133	%	05/31/2011 23:04	
1,2-Dichloroethane-D4	90	66-139	%	05/31/2011 23:04	
Toluene-D8	85	70-130	%	05/31/2011 23:04	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BLK

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	98	62-123	%	05/21/2011 22:07	
Dibromofluoromethane	104	52-140	%	05/21/2011 22:07	
1,2-Dichloroethane-D4	114	54-133	%	05/21/2011 22:07	
Toluene-D8	99	63-126	%	05/21/2011 22:07	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BKS

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	85	62-123	%	05/21/2011 22:34	
Dibromofluoromethane	84	52-140	%	05/21/2011 22:34	
1,2-Dichloroethane-D4	95	54-133	%	05/21/2011 22:34	
Toluene-D8	80	63-126	%	05/21/2011 22:34	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BSD

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	101	62-123	%	05/21/2011 23:00	
Dibromofluoromethane	99	52-140	%	05/21/2011 23:00	
1,2-Dichloroethane-D4	117	54-133	%	05/21/2011 23:00	
Toluene-D8	100	63-126	%	05/21/2011 23:00	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417367-002 S

Seq Number: 857319

Prep Date: 05/20/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	62-123	%	05/26/2011 01:48	
Dibromofluoromethane	101	52-140	%	05/26/2011 01:48	
1,2-Dichloroethane-D4	112	54-133	%	05/26/2011 01:48	
Toluene-D8	98	63-126	%	05/26/2011 01:48	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417367-002 SD

Seq Number: 857319

Prep Date: 05/20/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	95	62-123	%	05/26/2011 02:15	
Dibromofluoromethane	92	52-140	%	05/26/2011 02:15	
1,2-Dichloroethane-D4	107	54-133	%	05/26/2011 02:15	
Toluene-D8	93	63-126	%	05/26/2011 02:15	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BLK

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	73	44-103	%	06/01/2011 14:22	
2-Fluorophenol	66	15-111	%	06/01/2011 14:22	
Nitrobenzene-d5	73	45-109	%	06/01/2011 14:22	
Phenol-d6	72	37-105	%	06/01/2011 14:22	
Terphenyl-D14	88	41-118	%	06/01/2011 14:22	
2,4,6-Tribromophenol	59	10-124	%	06/01/2011 14:22	
2-Chlorophenol-D4	72	24-110	%	06/01/2011 14:22	
1,2-Dichlorobenzene-D4	69	38-102	%	06/01/2011 14:22	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BKS

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	84	44-103	%	06/01/2011 15:13	
2-Fluorophenol	72	15-111	%	06/01/2011 15:13	
Nitrobenzene-d5	78	45-109	%	06/01/2011 15:13	
Phenol-d6	80	37-105	%	06/01/2011 15:13	
Terphenyl-D14	91	41-118	%	06/01/2011 15:13	
2,4,6-Tribromophenol	79	10-124	%	06/01/2011 15:13	
2-Chlorophenol-D4	77	24-110	%	06/01/2011 15:13	
1,2-Dichlorobenzene-D4	77	38-102	%	06/01/2011 15:13	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BSD

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	79	44-103	%	06/01/2011 16:05	
2-Fluorophenol	72	15-111	%	06/01/2011 16:05	
Nitrobenzene-d5	76	45-109	%	06/01/2011 16:05	
Phenol-d6	75	37-105	%	06/01/2011 16:05	
Terphenyl-D14	84	41-118	%	06/01/2011 16:05	
2,4,6-Tribromophenol	71	10-124	%	06/01/2011 16:05	
2-Chlorophenol-D4	74	24-110	%	06/01/2011 16:05	
1,2-Dichlorobenzene-D4	75	38-102	%	06/01/2011 16:05	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417367,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Soil

Prep Method: SW3545

Sample: 417367-002 S

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	45	44-103	%	06/02/2011 23:57	
2-Fluorophenol	33	15-111	%	06/02/2011 23:57	
Nitrobenzene-d5	39	45-109	%	06/02/2011 23:57	S8
Phenol-d6	37	37-105	%	06/02/2011 23:57	
Terphenyl-D14	50	41-118	%	06/02/2011 23:57	
2,4,6-Tribromophenol	46	10-124	%	06/02/2011 23:57	
2-Chlorophenol-D4	38	24-110	%	06/02/2011 23:57	
1,2-Dichlorobenzene-D4	41	38-102	%	06/02/2011 23:57	

Method: SVOCs by SW 8270C

Matrix: Soil

Prep Method: SW3545

Sample: 417367-002 SD

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	71	44-103	%	06/03/2011 00:50	
2-Fluorophenol	62	15-111	%	06/03/2011 00:50	
Nitrobenzene-d5	66	45-109	%	06/03/2011 00:50	
Phenol-d6	71	37-105	%	06/03/2011 00:50	
Terphenyl-D14	80	41-118	%	06/03/2011 00:50	
2,4,6-Tribromophenol	68	10-124	%	06/03/2011 00:50	
2-Chlorophenol-D4	66	24-110	%	06/03/2011 00:50	
1,2-Dichlorobenzene-D4	65	38-102	%	06/03/2011 00:50	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858071

MB Sample Id: 603968-1-BLK

Matrix: Water

LCS Sample Id: 603968-1-BKS

Prep Method: SW5030C

Date Prep: 05/28/2011

LCSD Sample Id: 603968-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	49.6	124	47.3	118	55-165	5	28	ug/L	05/28/11 23:00	
Benzene	<0.500	20	23.2	116	23.9	120	70-130	3	20	ug/L	05/28/11 23:00	
Bromobenzene	<1.50	20	16.6	83	16.5	83	70-130	1	20	ug/L	05/28/11 23:00	
Bromochloromethane	<0.500	20	26.2	131	26.4	132	67-125	1	24	ug/L	05/28/11 23:00	L1
Bromodichloromethane	<0.500	20	25.9	130	26.4	132	70-130	2	20	ug/L	05/28/11 23:00	L1
Bromoform	<1.00	20	21.4	107	22.0	110	69-130	3	20	ug/L	05/28/11 23:00	
Bromomethane	<5.00	20	27.4	137	28.4	142	58-138	4	25	ug/L	05/28/11 23:00	L1
2-Butanone	<5.00	40	49.4	124	48.2	121	58-146	2	27	ug/L	05/28/11 23:00	
n-Butylbenzene	<2.50	20	16.4	82	16.7	84	58-128	2	20	ug/L	05/28/11 23:00	
Sec-Butylbenzene	<1.50	20	16.7	84	16.9	85	61-133	1	20	ug/L	05/28/11 23:00	
tert-Butylbenzene	<2.50	20	17.6	88	17.8	89	65-128	1	20	ug/L	05/28/11 23:00	
Carbon Disulfide	<0.500	20	27.5	138	28.1	141	59-138	2	22	ug/L	05/28/11 23:00	L1
Carbon Tetrachloride	<0.500	20	25.3	127	26.0	130	57-140	3	21	ug/L	05/28/11 23:00	
Chlorobenzene	<0.500	20	18.7	94	18.9	95	70-130	1	20	ug/L	05/28/11 23:00	
Chloroethane	<4.00	20	22.1	111	23.4	117	60-146	6	24	ug/L	05/28/11 23:00	
Chloroform	<0.500	20	24.6	123	25.4	127	66-128	3	24	ug/L	05/28/11 23:00	
Chloromethane	<5.00	20	19.3	97	19.1	96	47-144	1	26	ug/L	05/28/11 23:00	
2-Chlorotoluene	<1.50	20	16.1	81	16.2	81	70-130	1	20	ug/L	05/28/11 23:00	
4-Chlorotoluene	<2.00	20	16.5	83	16.6	83	70-130	1	28	ug/L	05/28/11 23:00	
4-Isopropyltoluene	<1.50	20	17.7	89	18.0	90	67-135	2	20	ug/L	05/28/11 23:00	
Dibromochloromethane	<0.500	20	21.3	107	22.0	110	70-130	3	20	ug/L	05/28/11 23:00	
1,2-Dibromo-3-Chloropropane	<2.00	20	18.8	94	19.6	98	60-128	4	21	ug/L	05/28/11 23:00	
1,2-Dibromoethane	<0.500	20	20.1	101	20.7	104	70-130	3	20	ug/L	05/28/11 23:00	
Dibromomethane	<0.500	20	23.9	120	24.2	121	70-130	1	23	ug/L	05/28/11 23:00	
1,2-Dichlorobenzene	<1.50	20	17.7	89	17.9	90	70-130	1	20	ug/L	05/28/11 23:00	
1,3-Dichlorobenzene	<1.50	20	17.6	88	17.7	89	70-130	1	20	ug/L	05/28/11 23:00	
1,4-Dichlorobenzene	<1.50	20	16.8	84	16.6	83	70-130	1	20	ug/L	05/28/11 23:00	
Dichlorodifluoromethane	<2.00	20	17.6	88	17.6	88	9-134	0	27	ug/L	05/28/11 23:00	
1,1-Dichloroethane	<0.500	20	25.3	127	26.2	131	66-132	3	20	ug/L	05/28/11 23:00	
1,2-Dichloroethane	<0.500	20	25.5	128	25.6	128	70-130	0	20	ug/L	05/28/11 23:00	
1,1-Dichloroethene	<0.500	20	25.2	126	26.1	131	58-144	4	21	ug/L	05/28/11 23:00	
cis-1,2-Dichloroethene	<0.500	20	22.3	112	23.3	117	67-129	4	24	ug/L	05/28/11 23:00	
trans-1,2-dichloroethene	<0.500	20	24.2	121	24.8	124	63-137	2	21	ug/L	05/28/11 23:00	
1,2-Dichloropropane	<0.500	20	23.0	115	23.0	115	70-130	0	20	ug/L	05/28/11 23:00	
1,3-Dichloropropane	<1.00	20	19.7	99	19.9	100	70-130	1	20	ug/L	05/28/11 23:00	
2,2-Dichloropropane	<0.500	20	25.5	128	26.3	132	60-141	3	24	ug/L	05/28/11 23:00	
1,1-Dichloropropene	<1.00	20	23.9	120	24.2	121	64-135	1	20	ug/L	05/28/11 23:00	
cis-1,3-Dichloropropene	<1.00	20	24.9	125	24.7	124	70-130	1	20	ug/L	05/28/11 23:00	
trans-1,3-dichloropropene	<0.500	20	21.5	108	21.7	109	70-130	1	20	ug/L	05/28/11 23:00	
Ethylbenzene	<2.00	20	18.9	95	19.4	97	70-130	3	20	ug/L	05/28/11 23:00	
Hexachlorobutadiene	<5.00	20	16.9	85	17.5	88	54-145	3	22	ug/L	05/28/11 23:00	
2-Hexanone	<5.00	40	35.9	90	36.2	91	65-129	1	20	ug/L	05/28/11 23:00	
Isopropylbenzene	<2.50	20	21.6	108	22.2	111	70-130	3	20	ug/L	05/28/11 23:00	
Methylene Chloride	<3.00	20	22.7	114	23.0	115	61-127	1	20	ug/L	05/28/11 23:00	
Iodomethane (Methyl Iodide)	<2.00	20	27.7	139	29.7	149	68-128	7	22	ug/L	05/28/11 23:00	L1
4-Methyl-2-Pentanone	<5.00	40	46.4	116	47.2	118	67-131	2	21	ug/L	05/28/11 23:00	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858071

MB Sample Id: 603968-1-BLK

Matrix: Water

LCS Sample Id: 603968-1-BKS

Prep Method: SW5030C

Date Prep: 05/28/2011

LCSD Sample Id: 603968-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	25.2	126	25.6	128	70-130	2	21	ug/L	05/28/11 23:00	
Naphthalene	<5.00	20	19.2	96	20.5	103	64-133	7	27	ug/L	05/28/11 23:00	
n-Propylbenzene	<2.00	20	16.5	83	16.7	84	65-128	1	20	ug/L	05/28/11 23:00	
Styrene	<1.00	20	20.6	103	21.4	107	70-130	4	20	ug/L	05/28/11 23:00	
1,1,1,2-Tetrachloroethane	<0.500	20	20.9	105	21.1	106	70-130	1	20	ug/L	05/28/11 23:00	
1,1,2,2-Tetrachloroethane	<0.500	20	19.0	95	19.3	97	70-130	2	20	ug/L	05/28/11 23:00	
Tetrachloroethylene	<0.500	20	20.3	102	20.7	104	63-127	2	20	ug/L	05/28/11 23:00	
Toluene	<2.00	20	18.4	92	18.8	94	70-130	2	20	ug/L	05/28/11 23:00	
1,2,3-Trichlorobenzene	<5.00	20	18.2	91	18.6	93	66-131	2	27	ug/L	05/28/11 23:00	
1,2,4-Trichlorobenzene	<5.00	20	18.4	92	18.7	94	69-127	2	20	ug/L	05/28/11 23:00	
1,1,1-Trichloroethane	<0.500	20	25.5	128	26.3	132	62-133	3	20	ug/L	05/28/11 23:00	
1,1,2-Trichloroethane	<0.500	20	18.8	94	18.8	94	70-130	0	20	ug/L	05/28/11 23:00	
Trichloroethene	<0.500	20	24.3	122	24.9	125	70-130	2	20	ug/L	05/28/11 23:00	
Trichlorofluoromethane	<2.00	20	25.8	129	26.2	131	45-151	2	22	ug/L	05/28/11 23:00	
1,2,3-Trichloropropane	<1.00	20	19.6	98	19.6	98	70-130	0	20	ug/L	05/28/11 23:00	
1,2,4-Trimethylbenzene	<2.00	20	17.0	85	17.2	86	70-130	1	20	ug/L	05/28/11 23:00	
1,3,5-Trimethylbenzene	<1.50	20	16.7	84	17.1	86	70-130	2	20	ug/L	05/28/11 23:00	
o-Xylene	<1.00	20	19.7	99	20.2	101	70-130	3	20	ug/L	05/28/11 23:00	
m,p-Xylenes	<2.00	40	39.4	99	40.2	101	70-130	2	20	ug/L	05/28/11 23:00	
Vinyl Acetate	<5.00	20	19.8	99	20.7	104	52-142	4	22	ug/L	05/28/11 23:00	
Vinyl Chloride	<0.500	20	21.1	106	21.8	109	43-120	3	25	ug/L	05/28/11 23:00	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858435

MB Sample Id: 604190-1-BLK

Matrix: Water

LCS Sample Id: 604190-1-BKS

Prep Method: SW5030C

Date Prep: 05/31/2011

LCSD Sample Id: 604190-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	34.7	87	34.8	87	55-165	0	28	ug/L	05/31/11 21:56	
Benzene	<0.500	20	21.8	109	23.2	116	70-130	6	20	ug/L	05/31/11 21:56	
Bromobenzene	<1.50	20	18.5	93	19.5	98	70-130	5	20	ug/L	05/31/11 21:56	
Bromochloromethane	<0.500	20	24.5	123	25.0	125	67-125	2	24	ug/L	05/31/11 21:56	
Bromodichloromethane	<0.500	20	24.8	124	25.9	130	70-130	4	20	ug/L	05/31/11 21:56	
Bromoform	<1.00	20	22.1	111	22.4	112	69-130	1	20	ug/L	05/31/11 21:56	
Bromomethane	<5.00	20	26.5	133	27.5	138	58-138	4	25	ug/L	05/31/11 21:56	
2-Butanone	<5.00	40	43.4	109	40.8	102	58-146	6	27	ug/L	05/31/11 21:56	
n-Butylbenzene	<2.50	20	19.3	97	20.9	105	58-128	8	20	ug/L	05/31/11 21:56	
Sec-Butylbenzene	<1.50	20	19.5	98	21.1	106	61-133	8	20	ug/L	05/31/11 21:56	
tert-Butylbenzene	<2.50	20	19.5	98	21.1	106	65-128	8	20	ug/L	05/31/11 21:56	
Carbon Disulfide	<0.500	20	25.0	125	26.6	133	59-138	6	22	ug/L	05/31/11 21:56	
Carbon Tetrachloride	<0.500	20	22.1	111	24.0	120	57-140	8	21	ug/L	05/31/11 21:56	
Chlorobenzene	<0.500	20	19.1	96	20.0	100	70-130	5	20	ug/L	05/31/11 21:56	
Chloroethane	<4.00	20	20.8	104	21.3	107	60-146	2	24	ug/L	05/31/11 21:56	
Chloroform	<0.500	20	23.4	117	24.5	123	66-128	5	24	ug/L	05/31/11 21:56	
Chloromethane	<5.00	20	20.3	102	20.6	103	47-144	1	26	ug/L	05/31/11 21:56	
2-Chlorotoluene	<1.50	20	18.8	94	20.2	101	70-130	7	20	ug/L	05/31/11 21:56	
4-Chlorotoluene	<2.00	20	19.0	95	20.7	104	70-130	9	28	ug/L	05/31/11 21:56	
4-Isopropyltoluene	<1.50	20	20.7	104	21.9	110	67-135	6	20	ug/L	05/31/11 21:56	
Dibromochloromethane	<0.500	20	22.1	111	22.2	111	70-130	0	20	ug/L	05/31/11 21:56	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.4	102	20.5	103	60-128	0	21	ug/L	05/31/11 21:56	
1,2-Dibromoethane	<0.500	20	21.2	106	21.5	108	70-130	1	20	ug/L	05/31/11 21:56	
Dibromomethane	<0.500	20	22.7	114	23.6	118	70-130	4	23	ug/L	05/31/11 21:56	
1,2-Dichlorobenzene	<1.50	20	19.0	95	20.3	102	70-130	7	20	ug/L	05/31/11 21:56	
1,3-Dichlorobenzene	<1.50	20	19.3	97	20.4	102	70-130	6	20	ug/L	05/31/11 21:56	
1,4-Dichlorobenzene	<1.50	20	18.8	94	20.3	102	70-130	8	20	ug/L	05/31/11 21:56	
Dichlorodifluoromethane	<2.00	20	15.0	75	15.3	77	9-134	2	27	ug/L	05/31/11 21:56	
1,1-Dichloroethane	<0.500	20	23.6	118	24.7	124	66-132	5	20	ug/L	05/31/11 21:56	
1,2-Dichloroethane	<0.500	20	23.7	119	24.8	124	70-130	5	20	ug/L	05/31/11 21:56	
1,1-Dichloroethene	<0.500	20	23.4	117	24.8	124	58-144	6	21	ug/L	05/31/11 21:56	
cis-1,2-Dichloroethene	<0.500	20	22.6	113	23.5	118	67-129	4	24	ug/L	05/31/11 21:56	
trans-1,2-dichloroethene	<0.500	20	22.2	111	23.3	117	63-137	5	21	ug/L	05/31/11 21:56	
1,2-Dichloropropane	<0.500	20	22.3	112	23.9	120	70-130	7	20	ug/L	05/31/11 21:56	
1,3-Dichloropropane	<1.00	20	21.4	107	21.6	108	70-130	1	20	ug/L	05/31/11 21:56	
2,2-Dichloropropane	<0.500	20	24.4	122	25.7	129	60-141	5	24	ug/L	05/31/11 21:56	
1,1-Dichloropropene	<1.00	20	21.7	109	23.2	116	64-135	7	20	ug/L	05/31/11 21:56	
cis-1,3-Dichloropropene	<1.00	20	24.0	120	25.8	129	70-130	7	20	ug/L	05/31/11 21:56	
trans-1,3-dichloropropene	<0.500	20	23.9	120	24.4	122	70-130	2	20	ug/L	05/31/11 21:56	
Ethylbenzene	<2.00	20	19.9	100	20.7	104	70-130	4	20	ug/L	05/31/11 21:56	
Hexachlorobutadiene	<5.00	20	19.0	95	21.2	106	54-145	11	22	ug/L	05/31/11 21:56	
2-Hexanone	<5.00	40	36.8	92	37.1	93	65-129	1	20	ug/L	05/31/11 21:56	
Isopropylbenzene	<2.50	20	22.7	114	23.9	120	70-130	5	20	ug/L	05/31/11 21:56	
Methylene Chloride	<3.00	20	24.3	122	25.0	125	61-127	3	20	ug/L	05/31/11 21:56	
Iodomethane (Methyl Iodide)	<2.00	20	22.7	114	24.1	121	68-128	6	22	ug/L	05/31/11 21:56	
4-Methyl-2-Pentanone	<5.00	40	47.2	118	46.9	117	67-131	1	21	ug/L	05/31/11 21:56	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858435

MB Sample Id: 604190-1-BLK

Matrix: Water

LCS Sample Id: 604190-1-BKS

Prep Method: SW5030C

Date Prep: 05/31/2011

LCSD Sample Id: 604190-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	24.2	121	24.8	124	70-130	2	21	ug/L	05/31/11 21:56	
Naphthalene	<5.00	20	20.6	103	22.5	113	64-133	9	27	ug/L	05/31/11 21:56	
n-Propylbenzene	<2.00	20	19.6	98	20.9	105	65-128	6	20	ug/L	05/31/11 21:56	
Styrene	<1.00	20	22.2	111	23.0	115	70-130	4	20	ug/L	05/31/11 21:56	
1,1,1,2-Tetrachloroethane	<0.500	20	20.6	103	21.3	107	70-130	3	20	ug/L	05/31/11 21:56	
1,1,2,2-Tetrachloroethane	<0.500	20	20.7	104	21.1	106	70-130	2	20	ug/L	05/31/11 21:56	
Tetrachloroethylene	<0.500	20	19.3	97	20.5	103	63-127	6	20	ug/L	05/31/11 21:56	
Toluene	<2.00	20	20.0	100	20.8	104	70-130	4	20	ug/L	05/31/11 21:56	
1,2,3-Trichlorobenzene	<5.00	20	20.0	100	21.6	108	66-131	8	27	ug/L	05/31/11 21:56	
1,2,4-Trichlorobenzene	<5.00	20	20.4	102	21.9	110	69-127	7	20	ug/L	05/31/11 21:56	
1,1,1-Trichloroethane	<0.500	20	23.1	116	24.5	123	62-133	6	20	ug/L	05/31/11 21:56	
1,1,2-Trichloroethane	<0.500	20	20.2	101	20.6	103	70-130	2	20	ug/L	05/31/11 21:56	
Trichloroethene	<0.500	20	21.4	107	22.9	115	70-130	7	20	ug/L	05/31/11 21:56	
Trichlorofluoromethane	<2.00	20	22.8	114	24.0	120	45-151	5	22	ug/L	05/31/11 21:56	
1,2,3-Trichloropropane	<1.00	20	20.4	102	21.0	105	70-130	3	20	ug/L	05/31/11 21:56	
1,2,4-Trimethylbenzene	<2.00	20	19.5	98	20.9	105	70-130	7	20	ug/L	05/31/11 21:56	
1,3,5-Trimethylbenzene	<1.50	20	19.3	97	20.9	105	70-130	8	20	ug/L	05/31/11 21:56	
o-Xylene	<1.00	20	20.8	104	22.1	111	70-130	6	20	ug/L	05/31/11 21:56	
m,p-Xylenes	<2.00	40	41.0	103	43.2	108	70-130	5	20	ug/L	05/31/11 21:56	
Vinyl Acetate	<5.00	20	23.8	119	24.4	122	52-142	2	22	ug/L	05/31/11 21:56	
Vinyl Chloride	<0.500	20	21.5	108	21.9	110	43-120	2	25	ug/L	05/31/11 21:56	



City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858433

MB Sample Id: 604189-1-BLK

Matrix: Water

LCS Sample Id: 604189-1-BKS

Prep Method: SW5030C

Date Prep: 06/01/2011

LCSD Sample Id: 604189-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	27.7	69	31.7	79	55-165	13	28	ug/L	06/01/11 21:47	
Benzene	<0.500	20	19.0	95	19.4	97	70-130	2	20	ug/L	06/01/11 21:47	
Bromobenzene	<1.50	20	18.6	93	19.1	96	70-130	3	20	ug/L	06/01/11 21:47	
Bromochloromethane	<0.500	20	20.0	100	20.1	101	67-125	0	24	ug/L	06/01/11 21:47	
Bromodichloromethane	<0.500	20	21.2	106	21.7	109	70-130	2	20	ug/L	06/01/11 21:47	
Bromoform	<1.00	20	20.7	104	21.3	107	69-130	3	20	ug/L	06/01/11 21:47	
Bromomethane	<5.00	20	20.3	102	22.6	113	58-138	11	25	ug/L	06/01/11 21:47	
2-Butanone	<5.00	40	34.6	87	35.2	88	58-146	2	27	ug/L	06/01/11 21:47	
n-Butylbenzene	<2.50	20	19.3	97	19.8	99	58-128	3	20	ug/L	06/01/11 21:47	
Sec-Butylbenzene	<1.50	20	19.7	99	20.5	103	61-133	4	20	ug/L	06/01/11 21:47	
tert-Butylbenzene	<2.50	20	19.8	99	20.3	102	65-128	2	20	ug/L	06/01/11 21:47	
Carbon Disulfide	<0.500	20	20.8	104	21.5	108	59-138	3	22	ug/L	06/01/11 21:47	
Carbon Tetrachloride	<0.500	20	19.2	96	20.2	101	57-140	5	21	ug/L	06/01/11 21:47	
Chlorobenzene	<0.500	20	18.6	93	19.0	95	70-130	2	20	ug/L	06/01/11 21:47	
Chloroethane	<4.00	20	16.1	81	17.7	89	60-146	9	24	ug/L	06/01/11 21:47	
Chloroform	<0.500	20	19.4	97	19.4	97	66-128	0	24	ug/L	06/01/11 21:47	
Chloromethane	<5.00	20	16.8	84	17.0	85	47-144	1	26	ug/L	06/01/11 21:47	
2-Chlorotoluene	<1.50	20	19.0	95	19.6	98	70-130	3	20	ug/L	06/01/11 21:47	
4-Chlorotoluene	<2.00	20	19.4	97	19.8	99	70-130	2	28	ug/L	06/01/11 21:47	
4-Isopropyltoluene	<1.50	20	20.4	102	21.4	107	67-135	5	20	ug/L	06/01/11 21:47	
Dibromochloromethane	<0.500	20	20.6	103	21.3	107	70-130	3	20	ug/L	06/01/11 21:47	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.9	105	20.5	103	60-128	2	21	ug/L	06/01/11 21:47	
1,2-Dibromoethane	<0.500	20	20.5	103	20.6	103	70-130	0	20	ug/L	06/01/11 21:47	
Dibromomethane	<0.500	20	20.3	102	20.0	100	70-130	1	23	ug/L	06/01/11 21:47	
1,2-Dichlorobenzene	<1.50	20	19.8	99	19.8	99	70-130	0	20	ug/L	06/01/11 21:47	
1,3-Dichlorobenzene	<1.50	20	19.3	97	19.2	96	70-130	1	20	ug/L	06/01/11 21:47	
1,4-Dichlorobenzene	<1.50	20	19.4	97	19.4	97	70-130	0	20	ug/L	06/01/11 21:47	
Dichlorodifluoromethane	<2.00	20	11.6	58	12.0	60	9-134	3	27	ug/L	06/01/11 21:47	
1,1-Dichloroethane	<0.500	20	19.4	97	19.8	99	66-132	2	20	ug/L	06/01/11 21:47	
1,2-Dichloroethane	<0.500	20	19.2	96	19.9	100	70-130	4	20	ug/L	06/01/11 21:47	
1,1-Dichloroethene	<0.500	20	19.5	98	20.1	101	58-144	3	21	ug/L	06/01/11 21:47	
cis-1,2-Dichloroethene	<0.500	20	18.3	92	19.1	96	67-129	4	24	ug/L	06/01/11 21:47	
trans-1,2-dichloroethene	<0.500	20	18.3	92	18.6	93	63-137	2	21	ug/L	06/01/11 21:47	
1,2-Dichloropropane	<0.500	20	19.8	99	19.9	100	70-130	1	20	ug/L	06/01/11 21:47	
1,3-Dichloropropane	<1.00	20	20.2	101	20.8	104	70-130	3	20	ug/L	06/01/11 21:47	
2,2-Dichloropropane	<0.500	20	20.0	100	20.7	104	60-141	3	24	ug/L	06/01/11 21:47	
1,1-Dichloropropene	<1.00	20	18.5	93	19.0	95	64-135	3	20	ug/L	06/01/11 21:47	
cis-1,3-Dichloropropene	<1.00	20	20.5	103	20.9	105	70-130	2	20	ug/L	06/01/11 21:47	
trans-1,3-dichloropropene	<0.500	20	22.6	113	23.0	115	70-130	2	20	ug/L	06/01/11 21:47	
Ethylbenzene	<2.00	20	19.0	95	19.7	99	70-130	4	20	ug/L	06/01/11 21:47	
Hexachlorobutadiene	<5.00	20	19.5	98	20.1	101	54-145	3	22	ug/L	06/01/11 21:47	
2-Hexanone	<5.00	40	34.9	87	36.1	90	65-129	3	20	ug/L	06/01/11 21:47	
Isopropylbenzene	<2.50	20	21.6	108	22.4	112	70-130	4	20	ug/L	06/01/11 21:47	
Methylene Chloride	<3.00	20	19.5	98	19.8	99	61-127	2	20	ug/L	06/01/11 21:47	
Iodomethane (Methyl Iodide)	<2.00	20	18.7	94	20.1	101	68-128	7	22	ug/L	06/01/11 21:47	
4-Methyl-2-Pentanone	<5.00	40	40.3	101	40.1	100	67-131	0	21	ug/L	06/01/11 21:47	



City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858433

MB Sample Id: 604189-1-BLK

Matrix: Water

LCS Sample Id: 604189-1-BKS

Prep Method: SW5030C

Date Prep: 06/01/2011

LCSD Sample Id: 604189-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	19.1	96	19.3	97	70-130	1	21	ug/L	06/01/11 21:47	
Naphthalene	<5.00	20	20.9	105	22.7	114	64-133	8	27	ug/L	06/01/11 21:47	
n-Propylbenzene	<2.00	20	19.8	99	20.3	102	65-128	2	20	ug/L	06/01/11 21:47	
Styrene	<1.00	20	21.3	107	21.3	107	70-130	0	20	ug/L	06/01/11 21:47	
1,1,1,2-Tetrachloroethane	<0.500	20	19.9	100	20.2	101	70-130	1	20	ug/L	06/01/11 21:47	
1,1,2,2-Tetrachloroethane	<0.500	20	20.5	103	20.2	101	70-130	1	20	ug/L	06/01/11 21:47	
Tetrachloroethylene	<0.500	20	18.3	92	19.4	97	63-127	6	20	ug/L	06/01/11 21:47	
Toluene	<2.00	20	19.0	95	19.4	97	70-130	2	20	ug/L	06/01/11 21:47	
1,2,3-Trichlorobenzene	<5.00	20	20.4	102	20.7	104	66-131	1	27	ug/L	06/01/11 21:47	
1,2,4-Trichlorobenzene	<5.00	20	20.5	103	21.7	109	69-127	6	20	ug/L	06/01/11 21:47	
1,1,1-Trichloroethane	<0.500	20	19.1	96	19.7	99	62-133	3	20	ug/L	06/01/11 21:47	
1,1,2-Trichloroethane	<0.500	20	19.6	98	19.7	99	70-130	1	20	ug/L	06/01/11 21:47	
Trichloroethene	<0.500	20	18.9	95	19.5	98	70-130	3	20	ug/L	06/01/11 21:47	
Trichlorofluoromethane	<2.00	20	19.5	98	20.0	100	45-151	3	22	ug/L	06/01/11 21:47	
1,2,3-Trichloropropane	<1.00	20	19.8	99	20.3	102	70-130	2	20	ug/L	06/01/11 21:47	
1,2,4-Trimethylbenzene	<2.00	20	19.9	100	20.6	103	70-130	3	20	ug/L	06/01/11 21:47	
1,3,5-Trimethylbenzene	<1.50	20	19.6	98	20.3	102	70-130	4	20	ug/L	06/01/11 21:47	
o-Xylene	<1.00	20	19.9	100	20.7	104	70-130	4	20	ug/L	06/01/11 21:47	
m,p-Xylenes	<2.00	40	39.6	99	40.6	102	70-130	2	20	ug/L	06/01/11 21:47	
Vinyl Acetate	<5.00	20	19.1	96	19.0	95	52-142	1	22	ug/L	06/01/11 21:47	
Vinyl Chloride	<0.500	20	16.8	84	17.8	89	43-120	6	25	ug/L	06/01/11 21:47	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Prep Method: SW5030C

Seq Number: 858071

Matrix: Water

Date Prep: 05/28/2011

Parent Sample Id: 417856-002

MS Sample Id: 417856-002 S

MSD Sample Id: 417856-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	45.9	115	49.5	124	35-160	8	20	ug/L	05/28/11 23:45	
Benzene	<0.500	20	20.9	105	23.0	115	69-130	10	20	ug/L	05/28/11 23:45	
Bromobenzene	<1.50	20	15.0	75	16.2	81	70-130	8	20	ug/L	05/28/11 23:45	
Bromochloromethane	<0.500	20	22.6	113	25.3	127	63-119	11	22	ug/L	05/28/11 23:45	M1
Bromodichloromethane	<0.500	20	22.7	114	25.1	126	70-130	10	20	ug/L	05/28/11 23:45	
Bromoform	<1.00	20	19.5	98	21.5	108	57-121	10	20	ug/L	05/28/11 23:45	
Bromomethane	<5.00	20	25.9	130	28.3	142	53-141	9	22	ug/L	05/28/11 23:45	M1
2-Butanone	<5.00	40	43.9	110	46.8	117	46-136	6	22	ug/L	05/28/11 23:45	
n-Butylbenzene	<2.50	20	15.2	76	17.2	86	65-127	12	20	ug/L	05/28/11 23:45	
Sec-Butylbenzene	<1.50	20	15.6	78	16.9	85	70-130	8	20	ug/L	05/28/11 23:45	
tert-Butylbenzene	<2.50	20	16.1	81	17.6	88	70-130	9	20	ug/L	05/28/11 23:45	
Carbon Disulfide	<0.500	20	25.0	125	28.2	141	58-145	12	28	ug/L	05/28/11 23:45	
Carbon Tetrachloride	<0.500	20	24.6	123	26.7	134	60-152	8	20	ug/L	05/28/11 23:45	
Chlorobenzene	<0.500	20	16.6	83	18.2	91	70-130	9	20	ug/L	05/28/11 23:45	
Chloroethane	<4.00	20	20.8	104	23.4	117	59-153	12	20	ug/L	05/28/11 23:45	
Chloroform	<0.500	20	21.7	109	23.9	120	65-123	10	22	ug/L	05/28/11 23:45	
Chloromethane	<5.00	20	16.9	85	18.3	92	47-148	8	22	ug/L	05/28/11 23:45	
2-Chlorotoluene	<1.50	20	14.6	73	16.0	80	70-130	9	20	ug/L	05/28/11 23:45	
4-Chlorotoluene	<2.00	20	14.8	74	16.1	81	70-130	8	20	ug/L	05/28/11 23:45	
4-Isopropyltoluene	<1.50	20	16.3	82	17.8	89	70-130	9	20	ug/L	05/28/11 23:45	
Dibromochloromethane	<0.500	20	19.0	95	20.8	104	70-130	9	20	ug/L	05/28/11 23:45	
1,2-Dibromo-3-Chloropropane	<2.00	20	17.4	87	18.1	91	50-117	4	22	ug/L	05/28/11 23:45	
1,2-Dibromoethane	<0.500	20	17.9	90	19.4	97	67-117	8	20	ug/L	05/28/11 23:45	
Dibromomethane	<0.500	20	20.8	104	22.7	114	66-115	9	20	ug/L	05/28/11 23:45	
1,2-Dichlorobenzene	<1.50	20	15.8	79	17.1	86	70-130	8	20	ug/L	05/28/11 23:45	
1,3-Dichlorobenzene	<1.50	20	15.7	79	17.3	87	70-130	10	20	ug/L	05/28/11 23:45	
1,4-Dichlorobenzene	<1.50	20	15.1	76	16.2	81	70-130	7	20	ug/L	05/28/11 23:45	
Dichlorodifluoromethane	<2.00	20	16.3	82	18.4	92	16-151	12	33	ug/L	05/28/11 23:45	
1,1-Dichloroethane	<0.500	20	22.5	113	24.9	125	66-129	10	20	ug/L	05/28/11 23:45	
1,2-Dichloroethane	<0.500	20	22.0	110	24.0	120	64-126	9	20	ug/L	05/28/11 23:45	
1,1-Dichloroethene	<0.500	20	23.5	118	26.2	131	65-152	11	20	ug/L	05/28/11 23:45	
cis-1,2-Dichloroethene	<0.500	20	19.8	99	22.1	111	66-126	11	20	ug/L	05/28/11 23:45	
trans-1,2-dichloroethene	<0.500	20	21.7	109	24.1	121	66-135	10	20	ug/L	05/28/11 23:45	
1,2-Dichloropropane	<0.500	20	20.2	101	22.1	111	70-130	9	20	ug/L	05/28/11 23:45	
1,3-Dichloropropane	<1.00	20	17.6	88	19.1	96	67-115	8	20	ug/L	05/28/11 23:45	
2,2-Dichloropropane	<0.500	20	25.4	127	28.0	140	62-145	10	20	ug/L	05/28/11 23:45	
1,1-Dichloropropene	<1.00	20	22.1	111	24.9	125	72-140	12	20	ug/L	05/28/11 23:45	
cis-1,3-Dichloropropene	<1.00	20	22.0	110	24.3	122	67-122	10	20	ug/L	05/28/11 23:45	
trans-1,3-dichloropropene	<0.500	20	19.2	96	21.1	106	70-130	9	20	ug/L	05/28/11 23:45	
Ethylbenzene	<2.00	20	16.8	84	18.7	94	70-130	11	20	ug/L	05/28/11 23:45	
Hexachlorobutadiene	<5.00	20	16.5	83	18.0	90	68-143	9	20	ug/L	05/28/11 23:45	
2-Hexanone	<5.00	40	32.5	81	34.3	86	52-122	5	33	ug/L	05/28/11 23:45	
Isopropylbenzene	<2.50	20	19.5	98	22.0	110	70-130	12	20	ug/L	05/28/11 23:45	
Methylene Chloride	<3.00	20	19.5	98	21.6	108	59-121	10	20	ug/L	05/28/11 23:45	
Iodomethane (Methyl Iodide)	<2.00	20	25.5	128	28.5	143	66-127	11	20	ug/L	05/28/11 23:45	M1
4-Methyl-2-Pentanone	<5.00	40	41.9	105	43.4	109	53-125	4	20	ug/L	05/28/11 23:45	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858071

Parent Sample Id: 417856-002

Matrix: Water

MS Sample Id: 417856-002 S

Prep Method: SW5030C

Date Prep: 05/28/2011

MSD Sample Id: 417856-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	22.1	111	24.5	123	65-127	10	20	ug/L	05/28/11 23:45	
Naphthalene	<5.00	20	16.7	84	18.0	90	54-129	7	26	ug/L	05/28/11 23:45	
n-Propylbenzene	<2.00	20	15.3	77	16.5	83	69-126	8	20	ug/L	05/28/11 23:45	
Styrene	<1.00	20	18.4	92	20.3	102	49-142	10	37	ug/L	05/28/11 23:45	
1,1,1,2-Tetrachloroethane	<0.500	20	18.6	93	20.3	102	70-130	9	20	ug/L	05/28/11 23:45	
1,1,2,2-Tetrachloroethane	<0.500	20	17.6	88	19.4	97	64-122	10	20	ug/L	05/28/11 23:45	
Tetrachloroethylene	<0.500	20	18.5	93	21.2	106	69-130	14	20	ug/L	05/28/11 23:45	
Toluene	12.9	20	28.6	79	30.0	86	70-130	5	20	ug/L	05/28/11 23:45	
1,2,3-Trichlorobenzene	<5.00	20	16.1	81	17.2	86	61-126	7	24	ug/L	05/28/11 23:45	
1,2,4-Trichlorobenzene	<5.00	20	16.2	81	18.1	91	64-123	11	20	ug/L	05/28/11 23:45	
1,1,1-Trichloroethane	<0.500	20	23.7	119	26.1	131	68-136	10	20	ug/L	05/28/11 23:45	
1,1,2-Trichloroethane	<0.500	20	16.3	82	18.4	92	65-112	12	20	ug/L	05/28/11 23:45	
Trichloroethene	<0.500	20	21.3	107	23.3	117	70-130	9	20	ug/L	05/28/11 23:45	
Trichlorofluoromethane	<2.00	20	25.1	126	27.5	138	53-171	9	20	ug/L	05/28/11 23:45	
1,2,3-Trichloropropane	<1.00	20	17.5	88	19.0	95	58-116	8	20	ug/L	05/28/11 23:45	
1,2,4-Trimethylbenzene	<2.00	20	15.3	77	16.9	85	67-128	10	22	ug/L	05/28/11 23:45	
1,3,5-Trimethylbenzene	<1.50	20	15.2	76	16.8	84	70-130	10	20	ug/L	05/28/11 23:45	
o-Xylene	<1.00	20	17.6	88	19.4	97	70-130	10	20	ug/L	05/28/11 23:45	
m,p-Xylenes	<2.00	40	35.1	88	39.4	99	70-130	12	20	ug/L	05/28/11 23:45	
Vinyl Acetate	<5.00	20	21.6	108	23.0	115	43-133	6	23	ug/L	05/28/11 23:45	
Vinyl Chloride	<0.500	20	20.4	102	22.9	115	46-132	12	21	ug/L	05/28/11 23:45	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858435

Parent Sample Id: 417793-006

Matrix: Ground Water

MS Sample Id: 417793-006 S

Prep Method: SW5030C

Date Prep: 05/31/2011

MSD Sample Id: 417793-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	29.4	74	28.1	70	35-160	5	20	ug/L	05/31/11 22:42	
Benzene	<0.500	20	19.7	99	19.0	95	69-130	4	20	ug/L	05/31/11 22:42	
Bromobenzene	<1.50	20	16.5	83	16.4	82	70-130	1	20	ug/L	05/31/11 22:42	
Bromochloromethane	<0.500	20	21.1	106	20.1	101	63-119	5	22	ug/L	05/31/11 22:42	
Bromodichloromethane	<0.500	20	22.5	113	21.6	108	70-130	4	20	ug/L	05/31/11 22:42	
Bromoform	<1.00	20	19.4	97	19.3	97	57-121	1	20	ug/L	05/31/11 22:42	
Bromomethane	<5.00	20	24.2	121	23.2	116	53-141	4	22	ug/L	05/31/11 22:42	
2-Butanone	<5.00	40	36.5	91	36.7	92	46-136	1	22	ug/L	05/31/11 22:42	
n-Butylbenzene	<2.50	20	15.1	76	17.2	86	65-127	13	20	ug/L	05/31/11 22:42	
Sec-Butylbenzene	<1.50	20	15.6	78	17.6	88	70-130	12	20	ug/L	05/31/11 22:42	
tert-Butylbenzene	<2.50	20	16.4	82	17.8	89	70-130	8	20	ug/L	05/31/11 22:42	
Carbon Disulfide	<0.500	20	24.3	122	23.1	116	58-145	5	28	ug/L	05/31/11 22:42	
Carbon Tetrachloride	<0.500	20	21.1	106	20.6	103	60-152	2	20	ug/L	05/31/11 22:42	
Chlorobenzene	<0.500	20	17.0	85	16.7	84	70-130	2	20	ug/L	05/31/11 22:42	
Chloroethane	<4.00	20	19.1	96	18.9	95	59-153	1	20	ug/L	05/31/11 22:42	
Chloroform	<0.500	20	21.3	107	20.7	104	65-123	3	22	ug/L	05/31/11 22:42	
Chloromethane	<5.00	20	17.8	89	17.2	86	47-148	3	22	ug/L	05/31/11 22:42	
2-Chlorotoluene	<1.50	20	16.0	80	17.0	85	70-130	6	20	ug/L	05/31/11 22:42	
4-Chlorotoluene	<2.00	20	16.2	81	17.5	88	70-130	8	20	ug/L	05/31/11 22:42	
4-Isopropyltoluene	<1.50	20	16.4	82	18.6	93	70-130	13	20	ug/L	05/31/11 22:42	
Dibromochloromethane	<0.500	20	19.5	98	19.1	96	70-130	2	20	ug/L	05/31/11 22:42	
1,2-Dibromo-3-Chloropropane	<2.00	20	18.2	91	19.2	96	50-117	5	22	ug/L	05/31/11 22:42	
1,2-Dibromoethane	<0.500	20	18.5	93	18.6	93	67-117	1	20	ug/L	05/31/11 22:42	
Dibromomethane	<0.500	20	19.8	99	19.1	96	66-115	4	20	ug/L	05/31/11 22:42	
1,2-Dichlorobenzene	<1.50	20	16.1	81	17.1	86	70-130	6	20	ug/L	05/31/11 22:42	
1,3-Dichlorobenzene	<1.50	20	16.0	80	17.2	86	70-130	7	20	ug/L	05/31/11 22:42	
1,4-Dichlorobenzene	<1.50	20	15.4	77	17.1	86	70-130	10	20	ug/L	05/31/11 22:42	
Dichlorodifluoromethane	<2.00	20	14.7	74	13.4	67	16-151	9	33	ug/L	05/31/11 22:42	
1,1-Dichloroethane	<0.500	20	21.2	106	20.5	103	66-129	3	20	ug/L	05/31/11 22:42	
1,2-Dichloroethane	<0.500	20	20.5	103	20.1	101	64-126	2	20	ug/L	05/31/11 22:42	
1,1-Dichloroethene	<0.500	20	22.4	112	21.5	108	65-152	4	20	ug/L	05/31/11 22:42	
cis-1,2-Dichloroethene	<0.500	20	20.5	103	19.7	99	66-126	4	20	ug/L	05/31/11 22:42	
trans-1,2-dichloroethene	<0.500	20	20.5	103	19.8	99	66-135	3	20	ug/L	05/31/11 22:42	
1,2-Dichloropropane	<0.500	20	20.1	101	19.7	99	70-130	2	20	ug/L	05/31/11 22:42	
1,3-Dichloropropane	<1.00	20	18.5	93	18.4	92	67-115	1	20	ug/L	05/31/11 22:42	
2,2-Dichloropropane	<0.500	20	23.3	117	22.3	112	62-145	4	20	ug/L	05/31/11 22:42	
1,1-Dichloropropene	<1.00	20	20.2	101	19.7	99	72-140	3	20	ug/L	05/31/11 22:42	
cis-1,3-Dichloropropene	<1.00	20	21.1	106	20.3	102	67-122	4	20	ug/L	05/31/11 22:42	
trans-1,3-dichloropropene	<0.500	20	21.0	105	20.6	103	70-130	2	20	ug/L	05/31/11 22:42	
Ethylbenzene	<2.00	20	17.0	85	17.7	89	70-130	4	20	ug/L	05/31/11 22:42	
Hexachlorobutadiene	<5.00	20	15.6	78	15.6	78	68-143	0	20	ug/L	05/31/11 22:42	
2-Hexanone	<5.00	40	32.5	81	33.2	83	52-122	2	33	ug/L	05/31/11 22:42	
Isopropylbenzene	<2.50	20	18.7	94	20.6	103	70-130	10	20	ug/L	05/31/11 22:42	
Methylene Chloride	<3.00	20	20.6	103	20.0	100	59-121	3	20	ug/L	05/31/11 22:42	
Iodomethane (Methyl Iodide)	<2.00	20	21.4	107	20.8	104	66-127	3	20	ug/L	05/31/11 22:42	
4-Methyl-2-Pentanone	<5.00	40	40.9	102	41.9	105	53-125	2	20	ug/L	05/31/11 22:42	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858435

Parent Sample Id: 417793-006

Matrix: Ground Water

MS Sample Id: 417793-006 S

Prep Method: SW5030C

Date Prep: 05/31/2011

MSD Sample Id: 417793-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	22.1	111	21.7	109	65-127	2	20	ug/L	05/31/11 22:42	
Naphthalene	<5.00	20	17.2	86	19.6	98	54-129	13	26	ug/L	05/31/11 22:42	
n-Propylbenzene	<2.00	20	16.4	82	17.8	89	69-126	8	20	ug/L	05/31/11 22:42	
Styrene	<1.00	20	18.5	93	18.2	91	49-142	2	37	ug/L	05/31/11 22:42	
1,1,1,2-Tetrachloroethane	<0.500	20	18.3	92	18.2	91	70-130	1	20	ug/L	05/31/11 22:42	
1,1,2,2-Tetrachloroethane	<0.500	20	18.4	92	18.8	94	64-122	2	20	ug/L	05/31/11 22:42	
Tetrachloroethylene	<0.500	20	17.2	86	17.4	87	69-130	1	20	ug/L	05/31/11 22:42	
Toluene	<2.00	20	17.8	89	17.7	89	70-130	1	20	ug/L	05/31/11 22:42	
1,2,3-Trichlorobenzene	<5.00	20	16.0	80	18.1	91	61-126	12	24	ug/L	05/31/11 22:42	
1,2,4-Trichlorobenzene	<5.00	20	16.1	81	18.4	92	64-123	13	20	ug/L	05/31/11 22:42	
1,1,1-Trichloroethane	<0.500	20	21.4	107	20.6	103	68-136	4	20	ug/L	05/31/11 22:42	
1,1,2-Trichloroethane	<0.500	20	17.7	89	17.8	89	65-112	1	20	ug/L	05/31/11 22:42	
Trichloroethene	<0.500	20	19.7	99	19.2	96	70-130	3	20	ug/L	05/31/11 22:42	
Trichlorofluoromethane	<2.00	20	22.4	112	21.5	108	53-171	4	20	ug/L	05/31/11 22:42	
1,2,3-Trichloropropane	<1.00	20	18.2	91	18.3	92	58-116	1	20	ug/L	05/31/11 22:42	
1,2,4-Trimethylbenzene	<2.00	20	16.0	80	18.0	90	67-128	12	22	ug/L	05/31/11 22:42	
1,3,5-Trimethylbenzene	<1.50	20	15.7	79	17.5	88	70-130	11	20	ug/L	05/31/11 22:42	
o-Xylene	<1.00	20	17.9	90	18.7	94	70-130	4	20	ug/L	05/31/11 22:42	
m,p-Xylenes	<2.00	40	35.1	88	36.9	92	70-130	5	20	ug/L	05/31/11 22:42	
Vinyl Acetate	<5.00	20	21.0	105	19.7	99	43-133	6	23	ug/L	05/31/11 22:42	
Vinyl Chloride	<0.500	20	20.4	102	19.8	99	46-132	3	21	ug/L	05/31/11 22:42	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858433

Parent Sample Id: 417856-002

Matrix: Water

MS Sample Id: 417856-002 S

Prep Method: SW5030C

Date Prep: 06/01/2011

MSD Sample Id: 417856-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	28.1	70	27.4	69	35-160	3	20	ug/L	06/01/11 22:32	
Benzene	<0.500	20	18.1	91	17.5	88	69-130	3	20	ug/L	06/01/11 22:32	
Bromobenzene	<1.50	20	18.4	92	17.0	85	70-130	8	20	ug/L	06/01/11 22:32	
Bromochloromethane	<0.500	20	18.7	94	17.3	87	63-119	8	22	ug/L	06/01/11 22:32	
Bromodichloromethane	<0.500	20	20.6	103	19.4	97	70-130	6	20	ug/L	06/01/11 22:32	
Bromoform	<1.00	20	19.6	98	20.2	101	57-121	3	20	ug/L	06/01/11 22:32	
Bromomethane	<5.00	20	21.2	106	19.6	98	53-141	8	22	ug/L	06/01/11 22:32	
2-Butanone	<5.00	40	32.4	81	31.0	78	46-136	4	22	ug/L	06/01/11 22:32	
n-Butylbenzene	<2.50	20	20.1	101	18.0	90	65-127	11	20	ug/L	06/01/11 22:32	
Sec-Butylbenzene	<1.50	20	21.4	107	18.6	93	70-130	14	20	ug/L	06/01/11 22:32	
tert-Butylbenzene	<2.50	20	20.8	104	18.5	93	70-130	12	20	ug/L	06/01/11 22:32	
Carbon Disulfide	<0.500	20	20.8	104	19.6	98	58-145	6	28	ug/L	06/01/11 22:32	
Carbon Tetrachloride	<0.500	20	19.8	99	18.9	95	60-152	5	20	ug/L	06/01/11 22:32	
Chlorobenzene	<0.500	20	17.7	89	17.1	86	70-130	3	20	ug/L	06/01/11 22:32	
Chloroethane	<4.00	20	16.7	84	16.3	82	59-153	2	20	ug/L	06/01/11 22:32	
Chloroform	<0.500	20	18.2	91	17.3	87	65-123	5	22	ug/L	06/01/11 22:32	
Chloromethane	<5.00	20	16.9	85	14.7	74	47-148	14	22	ug/L	06/01/11 22:32	
2-Chlorotoluene	<1.50	20	19.1	96	17.5	88	70-130	9	20	ug/L	06/01/11 22:32	
4-Chlorotoluene	<2.00	20	19.4	97	17.8	89	70-130	9	20	ug/L	06/01/11 22:32	
4-Isopropyltoluene	<1.50	20	21.8	109	19.2	96	70-130	13	20	ug/L	06/01/11 22:32	
Dibromochloromethane	<0.500	20	19.8	99	19.4	97	70-130	2	20	ug/L	06/01/11 22:32	
1,2-Dibromo-3-Chloropropane	<2.00	20	19.2	96	19.0	95	50-117	1	22	ug/L	06/01/11 22:32	
1,2-Dibromoethane	<0.500	20	19.0	95	18.6	93	67-117	2	20	ug/L	06/01/11 22:32	
Dibromomethane	<0.500	20	18.7	94	17.8	89	66-115	5	20	ug/L	06/01/11 22:32	
1,2-Dichlorobenzene	<1.50	20	19.3	97	17.4	87	70-130	10	20	ug/L	06/01/11 22:32	
1,3-Dichlorobenzene	<1.50	20	18.9	95	17.9	90	70-130	5	20	ug/L	06/01/11 22:32	
1,4-Dichlorobenzene	<1.50	20	18.3	92	17.3	87	70-130	6	20	ug/L	06/01/11 22:32	
Dichlorodifluoromethane	<2.00	20	12.0	60	10.6	53	16-151	12	33	ug/L	06/01/11 22:32	
1,1-Dichloroethane	<0.500	20	18.4	92	17.7	89	66-129	4	20	ug/L	06/01/11 22:32	
1,2-Dichloroethane	<0.500	20	18.3	92	17.0	85	64-126	7	20	ug/L	06/01/11 22:32	
1,1-Dichloroethene	<0.500	20	19.5	98	18.6	93	65-152	5	20	ug/L	06/01/11 22:32	
cis-1,2-Dichloroethene	<0.500	20	18.0	90	16.7	84	66-126	7	20	ug/L	06/01/11 22:32	
trans-1,2-dichloroethene	<0.500	20	18.0	90	16.8	84	66-135	7	20	ug/L	06/01/11 22:32	
1,2-Dichloropropane	<0.500	20	18.9	95	17.7	89	70-130	7	20	ug/L	06/01/11 22:32	
1,3-Dichloropropane	<1.00	20	18.7	94	18.2	91	67-115	3	20	ug/L	06/01/11 22:32	
2,2-Dichloropropane	<0.500	20	19.5	98	18.9	95	62-145	3	20	ug/L	06/01/11 22:32	
1,1-Dichloropropene	<1.00	20	18.6	93	17.6	88	72-140	6	20	ug/L	06/01/11 22:32	
cis-1,3-Dichloropropene	<1.00	20	19.4	97	18.5	93	67-122	5	20	ug/L	06/01/11 22:32	
trans-1,3-dichloropropene	<0.500	20	20.7	104	20.5	103	70-130	1	20	ug/L	06/01/11 22:32	
Ethylbenzene	<2.00	20	18.2	91	17.5	88	70-130	4	20	ug/L	06/01/11 22:32	
Hexachlorobutadiene	<5.00	20	21.7	109	18.9	95	68-143	14	20	ug/L	06/01/11 22:32	
2-Hexanone	<5.00	40	32.5	81	31.8	80	52-122	2	33	ug/L	06/01/11 22:32	
Isopropylbenzene	<2.50	20	21.6	108	20.6	103	70-130	5	20	ug/L	06/01/11 22:32	
Methylene Chloride	<3.00	20	17.9	90	17.0	85	59-121	5	20	ug/L	06/01/11 22:32	
Iodomethane (Methyl Iodide)	<2.00	20	19.0	95	17.5	88	66-127	8	20	ug/L	06/01/11 22:32	
4-Methyl-2-Pentanone	<5.00	40	37.9	95	36.7	92	53-125	3	20	ug/L	06/01/11 22:32	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 858433

Parent Sample Id: 417856-002

Matrix: Water

MS Sample Id: 417856-002 S

Prep Method: SW5030C

Date Prep: 06/01/2011

MSD Sample Id: 417856-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	18.1	91	17.4	87	65-127	4	20	ug/L	06/01/11 22:32	
Naphthalene	<5.00	20	20.2	101	19.9	100	54-129	1	26	ug/L	06/01/11 22:32	
n-Propylbenzene	<2.00	20	20.6	103	18.3	92	69-126	12	20	ug/L	06/01/11 22:32	
Styrene	<1.00	20	20.0	100	18.5	93	49-142	8	37	ug/L	06/01/11 22:32	
1,1,1,2-Tetrachloroethane	<0.500	20	18.7	94	18.1	91	70-130	3	20	ug/L	06/01/11 22:32	
1,1,2,2-Tetrachloroethane	<0.500	20	18.7	94	19.0	95	64-122	2	20	ug/L	06/01/11 22:32	
Tetrachloroethylene	<0.500	20	17.8	89	17.2	86	69-130	3	20	ug/L	06/01/11 22:32	
Toluene	8.48	20	25.8	87	26.1	88	70-130	1	20	ug/L	06/01/11 22:32	
1,2,3-Trichlorobenzene	<5.00	20	19.7	99	18.6	93	61-126	6	24	ug/L	06/01/11 22:32	
1,2,4-Trichlorobenzene	<5.00	20	20.5	103	19.2	96	64-123	7	20	ug/L	06/01/11 22:32	
1,1,1-Trichloroethane	<0.500	20	18.8	94	18.1	91	68-136	4	20	ug/L	06/01/11 22:32	
1,1,2-Trichloroethane	<0.500	20	17.9	90	17.7	89	65-112	1	20	ug/L	06/01/11 22:32	
Trichloroethene	<0.500	20	18.2	91	17.2	86	70-130	6	20	ug/L	06/01/11 22:32	
Trichlorofluoromethane	<2.00	20	19.6	98	18.7	94	53-171	5	20	ug/L	06/01/11 22:32	
1,2,3-Trichloropropane	<1.00	20	18.4	92	18.1	91	58-116	2	20	ug/L	06/01/11 22:32	
1,2,4-Trimethylbenzene	<2.00	20	19.8	99	17.5	88	67-128	12	22	ug/L	06/01/11 22:32	
1,3,5-Trimethylbenzene	<1.50	20	20.2	101	17.9	90	70-130	12	20	ug/L	06/01/11 22:32	
o-Xylene	<1.00	20	19.5	98	18.5	93	70-130	5	20	ug/L	06/01/11 22:32	
m,p-Xylenes	<2.00	40	38.2	96	36.5	91	70-130	5	20	ug/L	06/01/11 22:32	
Vinyl Acetate	<5.00	20	17.7	89	16.7	84	43-133	6	23	ug/L	06/01/11 22:32	
Vinyl Chloride	<0.500	20	18.2	91	16.7	84	46-132	9	21	ug/L	06/01/11 22:32	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Matrix: Solid

Prep Method: SW5035A

Date Prep: 05/19/2011

MB Sample Id: 603520-1-BLK

LCS Sample Id: 603520-1-BKS

LCSD Sample Id: 603520-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.50	2	1.82	91	1.95	98	52-140	7	23	mg/kg	05/21/11 22:34	
Benzene	<0.0500	1	0.924	92	0.940	94	70-130	2	20	mg/kg	05/21/11 22:34	
Bromobenzene	<0.250	1	0.943	94	0.961	96	70-130	2	20	mg/kg	05/21/11 22:34	
Bromochloromethane	<0.0500	1	0.966	97	0.982	98	70-130	2	20	mg/kg	05/21/11 22:34	
Bromodichloromethane	<0.0500	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/21/11 22:34	
Bromoform	<0.100	1	1.01	101	1.07	107	64-120	6	20	mg/kg	05/21/11 22:34	
Bromomethane	<0.500	1	1.29	129	1.45	145	21-168	12	56	mg/kg	05/21/11 22:34	
2-Butanone	<0.500	2	1.51	76	1.71	86	70-133	12	23	mg/kg	05/21/11 22:34	
tert-Butylbenzene	<0.250	1	1.04	104	1.06	106	70-130	2	20	mg/kg	05/21/11 22:34	
Sec-Butylbenzene	<0.250	1	1.00	100	1.01	101	70-130	1	20	mg/kg	05/21/11 22:34	
n-Butylbenzene	<0.250	1	0.961	96	0.969	97	70-130	1	20	mg/kg	05/21/11 22:34	
Carbon Disulfide	<0.500	1	0.959	96	0.801	80	43-164	18	38	mg/kg	05/21/11 22:34	
Carbon Tetrachloride	<0.0500	1	1.11	111	1.16	116	70-130	4	20	mg/kg	05/21/11 22:34	
Chlorobenzene	<0.0500	1	0.983	98	0.988	99	70-130	1	20	mg/kg	05/21/11 22:34	
Chloroethane	<0.500	1	1.01	101	0.928	93	35-156	8	48	mg/kg	05/21/11 22:34	
Chloroform	<0.0500	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
Chloromethane	<0.500	1	0.584	58	0.580	58	36-153	1	41	mg/kg	05/21/11 22:34	
2-Chlorotoluene	<0.250	1	1.09	109	1.08	108	70-130	1	20	mg/kg	05/21/11 22:34	
4-Chlorotoluene	<0.250	1	1.05	105	1.07	107	70-130	2	20	mg/kg	05/21/11 22:34	
p-Cymene (p-Isopropyltoluene)	<0.250	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
1,2-Dibromo-3-Chloropropane	<0.500	1	0.859	86	0.912	91	64-114	6	20	mg/kg	05/21/11 22:34	
Dibromochloromethane	<0.0500	1	1.03	103	1.04	104	70-130	1	20	mg/kg	05/21/11 22:34	
1,2-Dibromoethane	<0.500	1	0.954	95	1.01	101	70-130	6	20	mg/kg	05/21/11 22:34	
Dibromomethane	<0.250	1	1.00	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
1,2-Dichlorobenzene	<0.0500	1	0.967	97	0.976	98	70-130	1	20	mg/kg	05/21/11 22:34	
1,3-Dichlorobenzene	<0.0500	1	0.966	97	0.951	95	70-130	2	20	mg/kg	05/21/11 22:34	
1,4-Dichlorobenzene	<0.0500	1	0.989	99	1.05	105	70-130	6	20	mg/kg	05/21/11 22:34	
Dichlorodifluoromethane	<0.500	1	0.458	46	0.444	44	12-169	3	49	mg/kg	05/21/11 22:34	
1,2-Dichloroethane	<0.0500	1	1.14	114	1.20	120	70-130	5	20	mg/kg	05/21/11 22:34	
1,1-Dichloroethane	<0.0500	1	1.03	103	1.04	104	70-130	1	20	mg/kg	05/21/11 22:34	
trans-1,2-dichloroethene	<0.0500	1	0.964	96	0.965	97	70-130	0	20	mg/kg	05/21/11 22:34	
cis-1,2-Dichloroethene	<0.0500	1	0.908	91	0.921	92	70-130	1	20	mg/kg	05/21/11 22:34	
1,1-Dichloroethene	<0.100	1	0.949	95	0.981	98	59-126	3	21	mg/kg	05/21/11 22:34	
2,2-Dichloropropane	<0.250	1	1.19	119	1.24	124	64-123	4	20	mg/kg	05/21/11 22:34	L1
1,3-Dichloropropane	<0.250	1	1.02	102	1.07	107	70-130	5	20	mg/kg	05/21/11 22:34	
1,2-Dichloropropane	<0.0500	1	0.950	95	0.977	98	70-130	3	20	mg/kg	05/21/11 22:34	
trans-1,3-dichloropropene	<0.0500	1	1.15	115	1.19	119	70-130	3	20	mg/kg	05/21/11 22:34	
1,1-Dichloropropene	<0.250	1	0.958	96	0.995	100	70-130	4	20	mg/kg	05/21/11 22:34	
cis-1,3-Dichloropropene	<0.0500	1	1.00	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
Ethylbenzene	<0.100	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
Hexachlorobutadiene	<0.500	1	1.11	111	1.12	112	70-130	1	20	mg/kg	05/21/11 22:34	
2-Hexanone	<0.500	2	1.83	92	1.98	99	70-130	8	20	mg/kg	05/21/11 22:34	
Iodomethane (Methyl Iodide)	<0.500	1	0.956	96	0.971	97	53-157	2	31	mg/kg	05/21/11 22:34	
Isopropylbenzene	<0.250	1	1.07	107	1.10	110	70-130	3	20	mg/kg	05/21/11 22:34	
Naphthalene	<0.250	1	0.890	89	0.981	98	70-130	10	20	mg/kg	05/21/11 22:34	
Methylene Chloride	<0.500	1	0.883	88	0.892	89	70-130	1	20	mg/kg	05/21/11 22:34	



City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

MB Sample Id: 603520-1-BLK

Matrix: Solid

LCS Sample Id: 603520-1-BKS

Prep Method: SW5035A

Date Prep: 05/19/2011

LCSD Sample Id: 603520-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.500	2	1.90	95	1.98	99	70-130	4	20	mg/kg	05/21/11 22:34	
MTBE	<0.250	1	0.999	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
n-Propylbenzene	<0.250	1	1.02	102	1.04	104	70-130	2	20	mg/kg	05/21/11 22:34	
Styrene	<0.250	1	1.00	100	1.03	103	70-130	3	20	mg/kg	05/21/11 22:34	
1,1,1,2-Tetrachloroethane	<0.250	1	1.09	109	1.08	108	70-130	1	20	mg/kg	05/21/11 22:34	
1,1,2,2-Tetrachloroethane	<0.100	1	0.922	92	0.954	95	70-130	3	20	mg/kg	05/21/11 22:34	
Tetrachloroethylene	<0.0500	1	0.958	96	0.984	98	70-130	3	20	mg/kg	05/21/11 22:34	
Toluene	<0.100	1	0.922	92	0.928	93	70-130	1	20	mg/kg	05/21/11 22:34	
1,2,4-Trichlorobenzene	<0.250	1	1.01	101	1.04	104	70-130	3	20	mg/kg	05/21/11 22:34	
1,2,3-Trichlorobenzene	<0.250	1	0.975	98	1.05	105	70-130	7	20	mg/kg	05/21/11 22:34	
1,1,2-Trichloroethane	<0.0500	1	0.940	94	0.967	97	70-130	3	20	mg/kg	05/21/11 22:34	
1,1,1-Trichloroethane	<0.0500	1	1.10	110	1.13	113	70-130	3	20	mg/kg	05/21/11 22:34	
Trichloroethene	<0.0500	1	0.968	97	1.00	100	70-130	3	20	mg/kg	05/21/11 22:34	
Trichlorofluoromethane	<0.500	1	1.01	101	1.02	102	54-136	1	34	mg/kg	05/21/11 22:34	
1,2,3-Trichloropropane	<0.250	1	1.02	102	1.05	105	70-130	3	20	mg/kg	05/21/11 22:34	
1,2,4-Trimethylbenzene	<0.250	1	1.04	104	1.06	106	70-130	2	20	mg/kg	05/21/11 22:34	
1,3,5-Trimethylbenzene	<0.250	1	1.05	105	1.07	107	70-130	2	20	mg/kg	05/21/11 22:34	
Vinyl Acetate	<0.500	1	0.892	89	0.924	92	22-183	4	20	mg/kg	05/21/11 22:34	
Vinyl Chloride	<0.500	1	0.773	77	0.772	77	38-154	0	20	mg/kg	05/21/11 22:34	
o-Xylene	<0.0500	1	0.992	99	1.01	101	70-130	2	20	mg/kg	05/21/11 22:34	
m,p-Xylenes	<0.100	2	1.98	99	2.00	100	70-130	1	20	mg/kg	05/21/11 22:34	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Matrix: Soil

Prep Method: SW5035A

Date Prep: 05/20/2011

Parent Sample Id: 417367-002

MS Sample Id: 417367-002 S

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.20	1.6	2.19	137	2.42	144	49-140	10	35	mg/kg	05/26/11 01:48	M1
Benzene	<0.0401	0.801	0.789	99	0.787	94	63-115	0	22	mg/kg	05/26/11 01:48	
Bromobenzene	<0.200	0.801	0.843	105	0.831	99	57-123	1	25	mg/kg	05/26/11 01:48	
Bromochloromethane	<0.0401	0.801	0.838	105	0.849	101	52-126	1	32	mg/kg	05/26/11 01:48	
Bromodichloromethane	<0.0401	0.801	0.951	119	0.944	113	57-120	1	22	mg/kg	05/26/11 01:48	
Bromoform	<0.0801	0.801	0.915	114	0.909	108	53-120	1	24	mg/kg	05/26/11 01:48	
Bromomethane	<0.401	0.801	1.81	226	1.72	205	25-190	5	54	mg/kg	05/26/11 01:48	M1
2-Butanone	<0.401	1.6	1.54	96	1.59	95	57-137	3	44	mg/kg	05/26/11 01:48	
tert-Butylbenzene	<0.200	0.801	0.930	116	0.894	107	49-133	4	28	mg/kg	05/26/11 01:48	
Sec-Butylbenzene	<0.200	0.801	0.907	113	0.863	103	47-137	5	29	mg/kg	05/26/11 01:48	
n-Butylbenzene	<0.200	0.801	0.868	108	0.836	100	35-134	4	30	mg/kg	05/26/11 01:48	
Carbon Disulfide	<0.401	0.801	0.770	96	0.653	78	26-156	16	40	mg/kg	05/26/11 01:48	
Carbon Tetrachloride	<0.0401	0.801	0.954	119	0.912	109	47-127	5	26	mg/kg	05/26/11 01:48	
Chlorobenzene	<0.0401	0.801	0.850	106	0.820	98	63-116	4	22	mg/kg	05/26/11 01:48	
Chloroethane	<0.401	0.801	0.758	95	0.824	98	32-145	8	51	mg/kg	05/26/11 01:48	
Chloroform	<0.0401	0.801	0.919	115	0.894	107	51-124	3	34	mg/kg	05/26/11 01:48	
Chloromethane	<0.401	0.801	0.451	56	0.485	58	28-142	7	48	mg/kg	05/26/11 01:48	
2-Chlorotoluene	<0.200	0.801	0.946	118	0.921	110	62-119	3	26	mg/kg	05/26/11 01:48	
4-Chlorotoluene	<0.200	0.801	0.935	117	0.893	107	65-116	5	24	mg/kg	05/26/11 01:48	M1
p-Cymene (p-Isopropyltoluene)	<0.200	0.801	0.930	116	0.892	106	44-138	4	28	mg/kg	05/26/11 01:48	
1,2-Dibromo-3-Chloropropane	<0.401	0.801	0.782	98	0.768	92	55-116	2	25	mg/kg	05/26/11 01:48	
Dibromochloromethane	<0.0401	0.801	0.916	114	0.882	105	56-121	4	24	mg/kg	05/26/11 01:48	
1,2-Dibromoethane	<0.401	0.801	0.845	105	0.814	97	58-115	4	22	mg/kg	05/26/11 01:48	
Dibromomethane	<0.200	0.801	0.875	109	0.862	103	59-117	1	23	mg/kg	05/26/11 01:48	
1,2-Dichlorobenzene	<0.0401	0.801	0.852	106	0.828	99	62-117	3	23	mg/kg	05/26/11 01:48	
1,3-Dichlorobenzene	<0.0401	0.801	0.865	108	0.832	99	61-118	4	24	mg/kg	05/26/11 01:48	
1,4-Dichlorobenzene	<0.0401	0.801	0.880	110	0.842	100	64-118	4	23	mg/kg	05/26/11 01:48	
Dichlorodifluoromethane	<0.401	0.801	0.379	30	0.381	32	25-143	1	62	mg/kg	05/26/11 01:48	
1,2-Dichloroethane	<0.0401	0.801	0.976	122	0.995	119	56-122	2	22	mg/kg	05/26/11 01:48	
1,1-Dichloroethane	<0.0401	0.801	0.869	108	0.861	103	50-126	1	36	mg/kg	05/26/11 01:48	
trans-1,2-dichloroethene	<0.0401	0.801	0.780	97	0.786	94	49-127	1	38	mg/kg	05/26/11 01:48	
cis-1,2-Dichloroethene	<0.0401	0.801	0.793	99	0.778	93	46-129	2	37	mg/kg	05/26/11 01:48	
1,1-Dichloroethene	<0.0801	0.801	0.772	96	0.799	95	36-131	3	55	mg/kg	05/26/11 01:48	
2,2-Dichloropropane	<0.200	0.801	0.996	124	0.963	115	41-133	3	32	mg/kg	05/26/11 01:48	
1,3-Dichloropropane	<0.200	0.801	0.901	112	0.899	107	55-117	0	24	mg/kg	05/26/11 01:48	
1,2-Dichloropropane	<0.0401	0.801	0.831	104	0.789	94	64-112	5	21	mg/kg	05/26/11 01:48	
trans-1,3-dichloropropene	<0.0401	0.801	0.988	123	0.948	113	59-127	4	22	mg/kg	05/26/11 01:48	
1,1-Dichloropropene	<0.200	0.801	0.820	102	0.791	94	57-119	4	26	mg/kg	05/26/11 01:48	
cis-1,3-Dichloropropene	<0.0401	0.801	0.866	108	0.873	104	66-115	1	22	mg/kg	05/26/11 01:48	
Ethylbenzene	<0.0801	0.801	0.898	112	0.869	104	59-117	3	27	mg/kg	05/26/11 01:48	
Hexachlorobutadiene	<0.401	0.801	0.987	123	0.934	111	41-148	6	26	mg/kg	05/26/11 01:48	
2-Hexanone	<0.401	1.6	1.85	116	1.80	107	60-128	3	25	mg/kg	05/26/11 01:48	
Iodomethane (Methyl Iodide)	<0.401	0.801	0.815	102	0.772	92	41-151	5	57	mg/kg	05/26/11 01:48	
Isopropylbenzene	<0.200	0.801	0.957	119	0.917	109	58-139	4	29	mg/kg	05/26/11 01:48	
Naphthalene	<0.200	0.801	0.808	101	0.839	100	37-138	4	26	mg/kg	05/26/11 01:48	
Methylene Chloride	1.53	0.801	2.48	119	2.40	104	48-123	3	37	mg/kg	05/26/11 01:48	



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Parent Sample Id: 417367-002

Matrix: Soil

MS Sample Id: 417367-002 S

Prep Method: SW5035A

Date Prep: 05/20/2011

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.401	1.6	1.70	106	1.77	105	67-129	4	25	mg/kg	05/26/11 01:48	
MTBE	<0.200	0.801	0.861	107	0.880	105	62-125	2	24	mg/kg	05/26/11 01:48	
n-Propylbenzene	<0.200	0.801	0.919	115	0.869	104	51-129	6	29	mg/kg	05/26/11 01:48	
Styrene	<0.200	0.801	0.881	110	0.857	102	57-123	3	23	mg/kg	05/26/11 01:48	
1,1,1,2-Tetrachloroethane	<0.200	0.801	0.936	117	0.903	108	59-115	4	23	mg/kg	05/26/11 01:48	M1
1,1,2,2-Tetrachloroethane	<0.0801	0.801	0.803	100	0.700	84	45-133	14	29	mg/kg	05/26/11 01:48	
Tetrachloroethylene	<0.0401	0.801	0.857	107	0.816	97	40-125	5	26	mg/kg	05/26/11 01:48	
Toluene	<0.0801	0.801	0.797	100	0.752	90	50-125	6	28	mg/kg	05/26/11 01:48	
1,2,4-Trichlorobenzene	<0.200	0.801	0.874	109	0.861	103	31-136	1	27	mg/kg	05/26/11 01:48	
1,2,3-Trichlorobenzene	<0.200	0.801	0.863	108	0.866	103	29-135	0	33	mg/kg	05/26/11 01:48	
1,1,2-Trichloroethane	<0.0401	0.801	0.831	104	0.799	95	53-117	4	24	mg/kg	05/26/11 01:48	
1,1,1-Trichloroethane	<0.0401	0.801	0.962	120	0.908	108	47-125	6	31	mg/kg	05/26/11 01:48	
Trichloroethene	<0.0401	0.801	0.855	107	0.935	112	51-130	9	24	mg/kg	05/26/11 01:48	
Trichlorofluoromethane	<0.401	0.801	0.723	90	0.746	89	36-133	3	45	mg/kg	05/26/11 01:48	V1
1,2,3-Trichloropropane	<0.200	0.801	0.911	114	0.940	112	56-120	3	25	mg/kg	05/26/11 01:48	
1,2,4-Trimethylbenzene	<0.200	0.801	0.929	116	0.894	107	49-129	4	38	mg/kg	05/26/11 01:48	
1,3,5-Trimethylbenzene	<0.200	0.801	0.951	119	0.897	107	44-137	6	38	mg/kg	05/26/11 01:48	
Vinyl Acetate	<0.401	0.801	0.526	66	0.177	15	25-170	99	50	mg/kg	05/26/11 01:48	M2R2
Vinyl Chloride	<0.401	0.801	0.527	66	0.593	71	25-144	12	47	mg/kg	05/26/11 01:48	
o-Xylene	<0.0401	0.801	0.859	107	0.830	99	52-127	3	29	mg/kg	05/26/11 01:48	
m,p-Xylenes	<0.0801	1.6	1.73	108	1.65	98	51-126	5	29	mg/kg	05/26/11 01:48	

City of Tucson / Environmental Services, Tucson, AZ

HQUEST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

MB Sample Id: 603967-1-BLK

Matrix: Solid

LCS Sample Id: 603967-1-BKS

Prep Method: SW3545

Date Prep: 05/31/2011

LCSD Sample Id: 603967-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.330	2	2.01	101	1.65	83	56-106	20	20	mg/kg	06/01/11 15:13	
Acenaphthylene	<0.330	2	1.88	94	1.76	88	60-97	7	20	mg/kg	06/01/11 15:13	
Anthracene	<0.330	2	1.90	95	1.76	88	55-96	8	24	mg/kg	06/01/11 15:13	
Azobenzene	<0.330	2	2.01	101	1.85	93	59-106	8	20	mg/kg	06/01/11 15:13	
Benzo(a)anthracene	<0.330	2	1.99	100	1.82	91	65-97	9	20	mg/kg	06/01/11 15:13	L1
Benzo(a)pyrene	<0.330	2	1.87	94	1.72	86	64-106	8	20	mg/kg	06/01/11 15:13	
Benzo(b)fluoranthene	<0.330	2	1.92	96	1.86	93	59-110	3	23	mg/kg	06/01/11 15:13	
Benzo(g,h,i)perylene	<0.330	2	2.02	101	1.80	90	55-120	12	20	mg/kg	06/01/11 15:13	
Benzo(k)fluoranthene	<0.330	2	2.07	104	1.85	93	60-116	11	20	mg/kg	06/01/11 15:13	
Benzoic Acid	<2.00	4	2.34	59	2.60	65	24-89	10	31	mg/kg	06/01/11 15:13	
Benzyl Alcohol	<0.330	2	1.69	85	1.66	83	59-96	2	20	mg/kg	06/01/11 15:13	
Benzyl Butyl Phthalate	<0.330	2	2.10	105	1.94	97	63-104	8	20	mg/kg	06/01/11 15:13	L1
bis(2-chloroethoxy) methane	<0.330	2	1.62	81	1.58	79	62-95	3	20	mg/kg	06/01/11 15:13	
bis(2-chloroethyl) ether	<0.330	2	1.50	75	1.49	75	60-94	1	20	mg/kg	06/01/11 15:13	
bis(2-chloroisopropyl) ether	<0.330	2	1.67	84	1.63	82	55-107	2	22	mg/kg	06/01/11 15:13	
bis(2-ethylhexyl) phthalate	<0.330	2	2.02	101	1.85	93	61-116	9	20	mg/kg	06/01/11 15:13	
4-Bromophenyl-phenylether	<0.330	2	1.66	83	1.56	78	72-119	6	25	mg/kg	06/01/11 15:13	
di-n-Butyl Phthalate	<0.330	2	1.93	97	1.75	88	64-111	10	25	mg/kg	06/01/11 15:13	
4-chloro-3-methylphenol	<0.330	4	3.37	84	3.16	79	53-110	6	20	mg/kg	06/01/11 15:13	
4-Chloroaniline	<1.00	2	1.82	91	1.77	89	33-197	3	20	mg/kg	06/01/11 15:13	
2-Chloronaphthalene	<0.330	2	1.69	85	1.62	81	60-93	4	20	mg/kg	06/01/11 15:13	
2-Chlorophenol	<0.330	4	3.01	75	2.93	73	55-99	3	20	mg/kg	06/01/11 15:13	
4-Chlorophenyl Phenyl Ether	<0.330	2	1.73	87	1.58	79	68-103	9	20	mg/kg	06/01/11 15:13	
Chrysene	<0.330	2	1.93	97	1.77	89	64-99	9	20	mg/kg	06/01/11 15:13	
Dibenz(a,h)Anthracene	<0.330	2	1.98	99	1.78	89	57-117	11	20	mg/kg	06/01/11 15:13	
Dibenzofuran	<0.330	2	1.77	89	1.66	83	62-95	6	20	mg/kg	06/01/11 15:13	
1,2-Dichlorobenzene	<0.330	2	1.57	79	1.55	78	58-88	1	20	mg/kg	06/01/11 15:13	
1,3-Dichlorobenzene	<0.330	2	1.58	79	1.57	79	58-90	1	20	mg/kg	06/01/11 15:13	
1,4-Dichlorobenzene	<0.330	2	1.55	78	1.51	76	59-91	3	20	mg/kg	06/01/11 15:13	
3,3-Dichlorobenzidine	<1.70	2	2.28	114	2.15	108	48-159	6	29	mg/kg	06/01/11 15:13	
2,4-Dichlorophenol	<0.500	4	3.01	75	2.87	72	53-102	5	20	mg/kg	06/01/11 15:13	
Diethyl Phthalate	<0.330	2	1.88	94	1.71	86	66-108	9	20	mg/kg	06/01/11 15:13	
Dimethyl Phthalate	<0.330	2	1.91	96	1.74	87	65-103	9	20	mg/kg	06/01/11 15:13	
2,4-Dimethylphenol	<0.330	4	3.04	76	2.89	72	52-91	5	20	mg/kg	06/01/11 15:13	
4,6-dinitro-2-methyl phenol	<2.00	4	3.78	95	3.79	95	50-119	0	27	mg/kg	06/01/11 15:13	
2,4-Dinitrophenol	<2.00	4	3.61	90	3.93	98	24-130	8	27	mg/kg	06/01/11 15:13	
2,4-Dinitrotoluene	<0.330	2	1.95	98	1.75	88	63-99	11	20	mg/kg	06/01/11 15:13	
2,6-Dinitrotoluene	<0.330	2	1.94	97	1.80	90	62-97	7	20	mg/kg	06/01/11 15:13	
Fluoranthene	<0.330	2	1.88	94	1.73	87	58-99	8	25	mg/kg	06/01/11 15:13	
Fluorene	<0.330	2	1.89	95	1.73	87	63-96	9	20	mg/kg	06/01/11 15:13	
Hexachlorobenzene	<0.330	2	1.69	85	1.56	78	61-99	8	25	mg/kg	06/01/11 15:13	
Hexachlorobutadiene	<0.330	2	1.44	72	1.42	71	52-91	1	20	mg/kg	06/01/11 15:13	
Hexachlorocyclopentadiene	<1.00	2	1.64	82	1.56	75	43-110	5	20	mg/kg	06/01/11 15:13	
Hexachloroethane	<0.330	2	1.54	77	1.51	76	57-95	2	20	mg/kg	06/01/11 15:13	
Indeno(1,2,3-c,d)Pyrene	<0.330	2	2.07	104	1.86	93	60-117	11	20	mg/kg	06/01/11 15:13	
Isophorone	<0.330	2	2.12	106	1.97	99	53-90	7	20	mg/kg	06/01/11 15:13	L1



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

MB Sample Id: 603967-1-BLK

Matrix: Solid

LCS Sample Id: 603967-1-BKS

Prep Method: SW3545

Date Prep: 05/31/2011

LCSD Sample Id: 603967-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.330	2	1.62	81	1.54	77	59-94	5	20	mg/kg	06/01/11 15:13	
2-methylphenol	<0.330	4	3.16	79	3.06	77	52-101	3	20	mg/kg	06/01/11 15:13	
3&4-Methylphenol	<0.500	4	2.95	74	2.86	72	55-107	3	20	mg/kg	06/01/11 15:13	
Naphthalene	<0.330	2	1.60	80	1.54	77	60-92	4	20	mg/kg	06/01/11 15:13	
Nitrobenzene	<0.330	2	1.58	79	1.54	77	59-100	3	20	mg/kg	06/01/11 15:13	
2-Nitrophenol	<0.330	4	3.11	78	2.96	74	52-99	5	20	mg/kg	06/01/11 15:13	
4-Nitrophenol	<2.00	4	4.18	105	3.84	96	51-121	8	20	mg/kg	06/01/11 15:13	
N-Nitrosodi-n-Propylamine	<0.330	2	1.85	93	1.78	89	55-121	4	20	mg/kg	06/01/11 15:13	
N-Nitrosodiphenylamine	<0.330	2	2.54	127	2.34	117	17-149	8	53	mg/kg	06/01/11 15:13	
di-n-Octyl Phthalate	<0.330	2	2.03	102	1.89	95	62-123	7	22	mg/kg	06/01/11 15:13	
Pentachlorophenol	<0.670	4	3.44	86	3.23	81	52-90	6	23	mg/kg	06/01/11 15:13	
Phenanthrene	<0.330	2	1.86	93	1.70	85	62-100	9	24	mg/kg	06/01/11 15:13	
Phenol	<0.330	4	3.15	79	3.00	75	54-101	5	20	mg/kg	06/01/11 15:13	
Pyrene	<0.330	2	2.00	100	1.83	92	65-99	9	20	mg/kg	06/01/11 15:13	L1
1,2,4-Trichlorobenzene	<0.500	2	1.62	81	1.57	79	58-96	3	20	mg/kg	06/01/11 15:13	
2,4,6-Trichlorophenol	<1.00	4	3.12	78	2.96	74	56-101	5	20	mg/kg	06/01/11 15:13	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

Matrix: Soil

Prep Method: SW3545

Date Prep: 05/31/2011

Parent Sample Id: 417367-002

MS Sample Id: 417367-002 S

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.657	1.99	0.958	48	1.48	74	23-102	43	20	mg/kg	06/02/11 23:57	R5
Acenaphthylene	<0.657	1.99	0.921	46	1.48	74	28-97	47	20	mg/kg	06/02/11 23:57	R5
Anthracene	<0.657	1.99	0.999	50	1.54	77	22-94	43	20	mg/kg	06/02/11 23:57	R5
Azobenzene	<0.657	1.99	0.990	50	1.53	77	22-105	43	20	mg/kg	06/02/11 23:57	R5
Benzo(a)anthracene	<0.657	1.99	1.09	55	1.60	80	17-100	38	20	mg/kg	06/02/11 23:57	R5
Benzo(a)pyrene	<0.657	1.99	1.01	51	1.49	75	22-111	38	20	mg/kg	06/02/11 23:57	R5
Benzo(b)fluoranthene	<0.657	1.99	0.920	46	1.67	84	22-104	58	20	mg/kg	06/02/11 23:57	R5
Benzo(g,h,i)perylene	<0.657	1.99	0.987	50	1.51	76	22-134	42	20	mg/kg	06/02/11 23:57	R5
Benzo(k)fluoranthene	<0.657	1.99	1.13	57	1.62	81	22-109	36	20	mg/kg	06/02/11 23:57	R5
Benzoic Acid	<9.95	5.97	<9.95	0	<9.95	0	7-175	NC	20	mg/kg	06/02/11 23:57	M2
Benzyl Alcohol	<0.657	1.99	0.793	40	1.42	71	44-92	57	20	mg/kg	06/02/11 23:57	M2R2
Benzyl Butyl Phthalate	<0.657	1.99	1.14	57	1.70	85	18-109	39	25	mg/kg	06/02/11 23:57	R5
bis(2-chloroethoxy) methane	<0.657	1.99	0.848	43	1.41	71	38-91	50	20	mg/kg	06/02/11 23:57	R5
bis(2-chloroethyl) ether	<0.657	1.99	0.759	38	1.25	63	38-91	49	20	mg/kg	06/02/11 23:57	R5
bis(2-chloroisopropyl) ether	<0.657	1.99	0.866	44	1.35	68	25-113	44	20	mg/kg	06/02/11 23:57	R5
bis(2-ethylhexyl) phthalate	<0.657	1.99	1.16	58	1.74	87	17-134	40	20	mg/kg	06/02/11 23:57	R5
4-Bromophenyl-phenylether	<0.657	1.99	0.863	43	1.38	69	22-121	46	20	mg/kg	06/02/11 23:57	R5
di-n-Butyl Phthalate	<0.657	1.99	1.00	50	1.52	76	17-115	41	20	mg/kg	06/02/11 23:57	R5
4-chloro-3-methylphenol	<0.657	3.98	1.60	40	2.77	70	39-98	54	20	mg/kg	06/02/11 23:57	R5
4-Chloroaniline	<1.00	1.99	1.10	55	1.67	84	33-247	42	20	mg/kg	06/02/11 23:57	R5
2-Chloronaphthalene	<0.657	1.99	0.925	46	1.44	72	27-95	44	20	mg/kg	06/02/11 23:57	R5
2-Chlorophenol	<0.657	3.98	1.50	38	2.54	64	46-85	51	20	mg/kg	06/02/11 23:57	M2R2
4-Chlorophenyl Phenyl Ether	<0.657	1.99	0.931	47	1.42	71	22-109	42	20	mg/kg	06/02/11 23:57	R5
Chrysene	<0.657	1.99	1.05	53	1.58	79	22-100	40	20	mg/kg	06/02/11 23:57	R5
Dibenz(a,h)Anthracene	<0.657	1.99	0.993	50	1.50	75	22-129	41	20	mg/kg	06/02/11 23:57	R5
Dibenzofuran	<0.657	1.99	0.951	48	1.46	73	25-98	42	20	mg/kg	06/02/11 23:57	R5
1,2-Dichlorobenzene	<0.657	1.99	0.836	42	1.32	66	33-88	45	20	mg/kg	06/02/11 23:57	R5
1,3-Dichlorobenzene	<0.657	1.99	0.808	41	1.26	63	32-89	44	20	mg/kg	06/02/11 23:57	R5
1,4-Dichlorobenzene	<0.657	1.99	0.823	41	1.29	65	33-91	44	20	mg/kg	06/02/11 23:57	R5
3,3-Dichlorobenzidine	<1.00	1.99	1.35	68	1.89	95	7-161	33	20	mg/kg	06/02/11 23:57	R5
2,4-Dichlorophenol	<0.995	3.98	1.54	39	2.61	66	41-88	52	20	mg/kg	06/02/11 23:57	M2R2
Diethyl Phthalate	<0.657	1.99	0.952	48	1.49	75	26-111	44	20	mg/kg	06/02/11 23:57	R5
Dimethyl Phthalate	<0.657	1.99	0.892	45	1.45	73	35-100	48	20	mg/kg	06/02/11 23:57	R5
2,4-Dimethylphenol	<0.657	3.98	1.55	39	2.66	67	9-84	53	20	mg/kg	06/02/11 23:57	R5
4,6-dinitro-2-methyl phenol	<1.00	3.98	1.84	46	2.86	72	50-146	44	20	mg/kg	06/02/11 23:57	M2R2
2,4-Dinitrophenol	<2.00	3.98	2.14	54	2.41	61	50-161	12	20	mg/kg	06/02/11 23:57	
2,4-Dinitrotoluene	<0.657	1.99	0.827	42	1.36	68	33-97	49	20	mg/kg	06/02/11 23:57	R5
2,6-Dinitrotoluene	<0.657	1.99	0.925	46	1.48	74	32-96	46	20	mg/kg	06/02/11 23:57	R5
Fluoranthene	<0.657	1.99	1.00	50	1.50	75	19-99	40	20	mg/kg	06/02/11 23:57	R5
Fluorene	<0.657	1.99	1.02	51	1.56	78	24-101	42	20	mg/kg	06/02/11 23:57	R5
Hexachlorobenzene	<0.657	1.99	0.891	45	1.39	70	18-102	44	20	mg/kg	06/02/11 23:57	R5
Hexachlorobutadiene	<0.657	1.99	0.816	41	1.26	63	21-93	43	20	mg/kg	06/02/11 23:57	R5
Hexachlorocyclopentadiene	0.607	1.99	0.607	31	0.700	35	3-104	12	20	mg/kg	06/02/11 23:57	
Hexachloroethane	<0.657	1.99	0.775	39	1.16	58	28-93	40	20	mg/kg	06/02/11 23:57	R5
Indeno(1,2,3-c,d)Pyrene	<0.657	1.99	1.03	52	1.59	80	22-130	43	20	mg/kg	06/02/11 23:57	R5
Isophorone	<0.657	1.99	1.00	50	1.64	82	28-88	48	20	mg/kg	06/02/11 23:57	R5



QC Summary **417367**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

Parent Sample Id: 417367-002

Matrix: Soil

MS Sample Id: 417367-002 S

Prep Method: SW3545

Date Prep: 05/31/2011

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.657	1.99	0.937	47	1.46	73	28-97	44	20	mg/kg	06/02/11 23:57	R5
2-methylphenol	<0.657	3.98	1.57	39	2.72	68	15-89	54	20	mg/kg	06/02/11 23:57	R5
3&4-Methylphenol	<0.995	3.98	1.46	37	2.55	64	25-97	54	20	mg/kg	06/02/11 23:57	R5
Naphthalene	<0.657	1.99	0.918	46	1.45	73	31-92	45	20	mg/kg	06/02/11 23:57	R5
Nitrobenzene	<0.657	1.99	0.787	40	1.35	68	41-94	53	20	mg/kg	06/02/11 23:57	M2R2
2-Nitrophenol	<0.657	3.98	1.35	34	2.59	65	44-87	63	20	mg/kg	06/02/11 23:57	M2R2
4-Nitrophenol	<1.00	3.98	1.47	37	2.54	64	50-148	53	20	mg/kg	06/02/11 23:57	M2R2
N-Nitrosodi-n-Propylamine	<0.657	1.99	0.816	41	1.38	69	29-121	51	20	mg/kg	06/02/11 23:57	R5
N-Nitrosodiphenylamine	<0.657	1.99	1.30	65	2.05	103	17-132	45	20	mg/kg	06/02/11 23:57	R5
di-n-Octyl Phthalate	<0.657	1.99	1.15	58	1.70	85	17-117	39	20	mg/kg	06/02/11 23:57	R5
Pentachlorophenol	<1.33	3.98	1.50	38	2.61	66	12-111	54	20	mg/kg	06/02/11 23:57	R5
Phenanthrene	<0.657	1.99	0.975	49	1.53	77	22-103	44	20	mg/kg	06/02/11 23:57	R5
Phenol	<0.657	3.98	1.43	36	2.58	65	46-88	57	20	mg/kg	06/02/11 23:57	M2R2
Pyrene	<0.657	1.99	1.09	55	1.67	84	22-104	42	20	mg/kg	06/02/11 23:57	R5
1,2,4-Trichlorobenzene	<0.900	1.99	0.918	47	1.47	74	29-96	45	20	mg/kg	06/02/11 23:57	R5
2,4,6-Trichlorophenol	<1.00	3.98	1.39	35	2.44	61	39-90	54	20	mg/kg	06/02/11 23:57	M2R2



Sample Receipt Checklist

Client Name: CRA

Date and Time Received: 5-23-11 0930

Work Order Number: 417367

Checked by: [Signature]

Checklist completed by: [Signature] Date: 5-23-11 Logged In by: lm Date: 5/23/11

Matrix: Soil/GW Courier Name: Client Xenco _____ Reviewed by: _____ Date: _____

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples received same day of collection?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Temp: <u>4.3</u> Wet Ice Present <input checked="" type="checkbox"/>
Where was the temperature reading taken at?	Sample <input checked="" type="checkbox"/>	Temp Blank <input type="checkbox"/>	Other: _____
VOA Water – VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Water – Microbiological bottles have ≤ 2.5 cm headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Water – All sample pH's acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> Checked by: _____

If No, list all samples and bottle types that are not acceptable in Additional Comments section. Also state any correction actions.

Sulfide Water – Bottles have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> (zero headspace ≤ than neck of bottle)
Dissolved Water Analytes – Field Filtered?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

Are samples received deemed acceptable? Yes No If No then complete section below

PC Notified	Date: _____	Init: _____	PC Init: _____
Client Notified	Date: _____	Init: _____	L/M <input type="checkbox"/> Date: _____ L/M <input type="checkbox"/> Date: _____
Contact Name: _____	Action to take:	Analyze <input type="checkbox"/>	Cancel <input type="checkbox"/> Hold <input type="checkbox"/> Other: _____
Changes/Comments made on original COC?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____
Changes made in LIMS?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____

Additional Comments: sample #6 rec'd all vials w/headspace and a lot of sediment. per meredith analyze.

Analytical Report 416904

for

City of Tucson / Environmental Services

Project Manager: Richard Byrd
Tucson Fire Department HQUST Site

055672.040

14-JUN-11

Collected By: Client



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Ph: (602) 437-0330

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

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Xenco-Boca Raton (EPA Lab Code: FL01273):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):

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Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

14-JUN-11

Project Manager: **Richard Byrd**
City of Tucson / Environmental Services
P.O. Box 27210
Tucson, AZ 85726

Reference: XENCO Report No: **416904**
Tucson Fire Department HQUST Site
Project Address:

Richard Byrd:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 416904. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 416904 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



Skip Harden

Project Manager

Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.

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CASE NARRATIVE

Client Name: City of Tucson / Environmental Services

Project Name: Tucson Fire Department HQUST Site

Project ID: 055672.040
Work Order Number: 416904

Report Date: 14-JUN-11
Date Received: 05/17/2011

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non nonformances and comments:

Batch: LBA-857697 Volatiles by SW 8260B

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-858061 SVOCs by SW 8270C

N1:

The MS/MSD pair was not analyzed due to the parent sample required a dilution. The dilution was high enough that it would have diluted out the spikes added.

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADEQ Arizona Data Qualifiers, Revision 3.0 9/20/2007. Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

- D1 Sample required dilution due to matrix.
- D2 Sample required dilution due to high concentration of target analyte.
- L1 The associated blank spike recovery was above laboratory acceptance limits.
- M1 Matrix spike recovery was high; the associated blank spike recovery was acceptable.
- M2 Matrix spike recovery was low; the associated blank spike recovery was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The associated blank spike recovery was acceptable.
- N1 See case narrative.
- R2 RPD/RSD exceeded the laboratory acceptance limit. See case narrative.
- S6 Surrogate recovery was below laboratory and method acceptance limits. Re-extraction and/or reanalysis confirms low recovery caused by matrix effect.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.



Sample Cross Reference 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
S-051711-MES-01	S	May-17-11 08:00		416904-001
S-051711-MES-02	S	May-17-11 08:09		416904-002
S-051711-MES-03	S	May-17-11 08:25		416904-003
S-051711-MES-04	S	May-17-11 08:40		416904-004
S-051711-MES-05	S	May-17-11 08:50		416904-005
GW-051711-MES-06	W	May-17-11 09:45		416904-006
S-051711-MES-07	S	May-17-11 14:35		416904-007
S-051711-MES-08	S	May-17-11 14:50		416904-008
S-051711-MES-09	S	May-17-11 15:00		416904-009
S-051711-MES-10	S	May-17-11 15:10		416904-010
S-051711-MES-11	S	May-17-11 15:20		416904-011
Trip Blank	W	May-17-11 09:45		416904-012



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-01	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-001	Date Collected: May-17-11 08:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A	% Moisture:
Tech: OEM	Date Prep: May-17-11 08:00	Basis: Wet Weight
Analyst: OEM		
Seq Number: 857697		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.42	1.42	mg/kg	05/24/11 21:58		0.95
Benzene	71-43-2	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Bromobenzene	108-86-1	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Bromochloromethane	74-97-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Bromodichloromethane	75-27-4	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Bromoform	75-25-2	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95
Bromomethane	74-83-9	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
2-Butanone	78-93-3	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
tert-Butylbenzene	98-06-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Sec-Butylbenzene	135-98-8	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
n-Butylbenzene	104-51-8	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Carbon Disulfide	75-15-0	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Carbon Tetrachloride	56-23-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Chlorobenzene	108-90-7	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Chloroethane	75-00-3	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Chloroform	67-66-3	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Chloromethane	74-87-3	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
2-Chlorotoluene	95-49-8	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
4-Chlorotoluene	106-43-4	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,2-Dibromo-3-Chloropropane	96-12-8	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Dibromochloromethane	124-48-1	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,2-Dibromoethane	106-93-4	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Dibromomethane	74-95-3	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,2-Dichlorobenzene	95-50-1	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,3-Dichlorobenzene	541-73-1	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,4-Dichlorobenzene	106-46-7	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Dichlorodifluoromethane	75-71-8	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
1,2-Dichloroethane	107-06-2	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,1-Dichloroethane	75-34-3	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
trans-1,2-dichloroethene	156-60-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
cis-1,2-Dichloroethene	156-59-2	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,1-Dichloroethene	75-35-4	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95
2,2-Dichloropropane	594-20-7	<0.237	0.237	mg/kg	05/24/11 21:58	L1	0.95
1,3-Dichloropropane	142-28-9	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,2-Dichloropropane	78-87-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
trans-1,3-dichloropropene	10061-02-6	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,1-Dichloropropene	563-58-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
cis-1,3-Dichloropropene	10061-01-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Ethylbenzene	100-41-4	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-01	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-001	Date Collected: May-17-11 08:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
2-Hexanone	591-78-6	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Iodomethane (Methyl Iodide)	74-88-4	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Isopropylbenzene	98-82-8	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Naphthalene	91-20-3	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Methylene Chloride	75-09-2	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
4-Methyl-2-Pentanone	108-10-1	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
MTBE	1634-04-4	4.05	0.237	mg/kg	05/24/11 21:58		0.95
n-Propylbenzene	103-65-1	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Styrene	100-42-5	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,1,1,2-Tetrachloroethane	630-20-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,1,2,2-Tetrachloroethane	79-34-5	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95
Tetrachloroethylene	127-18-4	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Toluene	108-88-3	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95
1,2,4-Trichlorobenzene	120-82-1	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,2,3-Trichlorobenzene	87-61-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,1,2-Trichloroethane	79-00-5	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
1,1,1-Trichloroethane	71-55-6	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Trichloroethene	79-01-6	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
Trichlorofluoromethane	75-69-4	<0.474	0.474	mg/kg	05/24/11 21:58	V1	0.95
1,2,3-Trichloropropane	96-18-4	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,2,4-Trimethylbenzene	95-63-6	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
1,3,5-Trimethylbenzene	108-67-8	<0.237	0.237	mg/kg	05/24/11 21:58		0.95
Vinyl Acetate	108-05-4	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
Vinyl Chloride	75-01-4	<0.474	0.474	mg/kg	05/24/11 21:58		0.95
o-Xylene	95-47-6	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95
m,p-Xylenes	179601-23-1	<0.0949	0.0949	mg/kg	05/24/11 21:58		0.95
Total Xylenes	1330-20-7	<0.0474	0.0474	mg/kg	05/24/11 21:58		0.95

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	104	%	62-123	05/24/11 21:58	
Dibromofluoromethane	1868-53-7	90	%	52-140	05/24/11 21:58	
1,2-Dichloroethane-D4	17060-07-0	99	%	54-133	05/24/11 21:58	
Toluene-D8	2037-26-5	90	%	63-126	05/24/11 21:58	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-01	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-001	Date Collected: May-17-11 08:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/27/11 15:58		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/27/11 15:58		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/27/11 15:58	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/27/11 15:58		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/27/11 15:58		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/27/11 15:58	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/27/11 15:58		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/27/11 15:58		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/27/11 15:58		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/27/11 15:58		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/27/11 15:58		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/27/11 15:58		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/27/11 15:58		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/27/11 15:58		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/27/11 15:58		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/27/11 15:58		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/27/11 15:58		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/27/11 15:58		1



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-01	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-001	Date Collected: May-17-11 08:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/27/11 15:58		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/27/11 15:58		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/27/11 15:58		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/27/11 15:58	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/27/11 15:58		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/27/11 15:58		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/27/11 15:58		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/27/11 15:58		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/27/11 15:58		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/27/11 15:58		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/27/11 15:58		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/27/11 15:58		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/27/11 15:58		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/27/11 15:58		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/27/11 15:58		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/27/11 15:58	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/27/11 15:58		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/27/11 15:58		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	59	%	44-103	05/27/11 15:58	
2-Fluorophenol	367-12-4	43	%	15-111	05/27/11 15:58	
Nitrobenzene-d5	4165-60-0	41	%	45-109	05/27/11 15:58	S6
Phenol-d6	13127-88-3	47	%	37-105	05/27/11 15:58	
Terphenyl-D14	1718-51-0	85	%	41-118	05/27/11 15:58	
2,4,6-Tribromophenol	118-79-6	42	%	10-124	05/27/11 15:58	
2-Chlorophenol-D4	93951-73-6	47	%	24-110	05/27/11 15:58	
1,2-Dichlorobenzene-D4	2199-69-1	60	%	38-102	05/27/11 15:58	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-02	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-002	Date Collected: May-17-11 08:09	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:09
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.51	1.51	mg/kg	05/24/11 22:24		1.01
Benzene	71-43-2	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Bromobenzene	108-86-1	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Bromochloromethane	74-97-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Bromodichloromethane	75-27-4	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Bromoform	75-25-2	<0.101	0.101	mg/kg	05/24/11 22:24		1.01
Bromomethane	74-83-9	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
2-Butanone	78-93-3	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
tert-Butylbenzene	98-06-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Sec-Butylbenzene	135-98-8	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
n-Butylbenzene	104-51-8	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Carbon Disulfide	75-15-0	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Carbon Tetrachloride	56-23-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Chlorobenzene	108-90-7	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Chloroethane	75-00-3	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Chloroform	67-66-3	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Chloromethane	74-87-3	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
2-Chlorotoluene	95-49-8	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
4-Chlorotoluene	106-43-4	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,2-Dibromo-3-Chloropropane	96-12-8	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Dibromochloromethane	124-48-1	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,2-Dibromoethane	106-93-4	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Dibromomethane	74-95-3	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,2-Dichlorobenzene	95-50-1	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,3-Dichlorobenzene	541-73-1	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,4-Dichlorobenzene	106-46-7	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Dichlorodifluoromethane	75-71-8	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
1,2-Dichloroethane	107-06-2	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,1-Dichloroethane	75-34-3	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
trans-1,2-dichloroethene	156-60-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
cis-1,2-Dichloroethene	156-59-2	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,1-Dichloroethene	75-35-4	<0.101	0.101	mg/kg	05/24/11 22:24		1.01
2,2-Dichloropropane	594-20-7	<0.252	0.252	mg/kg	05/24/11 22:24	L1	1.01
1,3-Dichloropropane	142-28-9	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,2-Dichloropropane	78-87-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
trans-1,3-dichloropropene	10061-02-6	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,1-Dichloropropene	563-58-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
cis-1,3-Dichloropropene	10061-01-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Ethylbenzene	100-41-4	<0.101	0.101	mg/kg	05/24/11 22:24		1.01

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-02	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-002	Date Collected: May-17-11 08:09	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:09
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
2-Hexanone	591-78-6	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Iodomethane (Methyl Iodide)	74-88-4	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Naphthalene	91-20-3	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Isopropylbenzene	98-82-8	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Methylene Chloride	75-09-2	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
4-Methyl-2-Pentanone	108-10-1	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
MTBE	1634-04-4	0.591	0.252	mg/kg	05/24/11 22:24		1.01
n-Propylbenzene	103-65-1	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Styrene	100-42-5	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,1,1,2-Tetrachloroethane	630-20-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,1,2,2-Tetrachloroethane	79-34-5	<0.101	0.101	mg/kg	05/24/11 22:24		1.01
Tetrachloroethylene	127-18-4	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Toluene	108-88-3	<0.101	0.101	mg/kg	05/24/11 22:24		1.01
1,2,4-Trichlorobenzene	120-82-1	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,2,3-Trichlorobenzene	87-61-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,1,2-Trichloroethane	79-00-5	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
1,1,1-Trichloroethane	71-55-6	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Trichloroethene	79-01-6	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
Trichlorofluoromethane	75-69-4	<0.503	0.503	mg/kg	05/24/11 22:24	V1	1.01
1,2,3-Trichloropropane	96-18-4	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,2,4-Trimethylbenzene	95-63-6	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
1,3,5-Trimethylbenzene	108-67-8	<0.252	0.252	mg/kg	05/24/11 22:24		1.01
Vinyl Acetate	108-05-4	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
Vinyl Chloride	75-01-4	<0.503	0.503	mg/kg	05/24/11 22:24		1.01
o-Xylene	95-47-6	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01
m,p-Xylenes	179601-23-1	<0.101	0.101	mg/kg	05/24/11 22:24		1.01
Total Xylenes	1330-20-7	<0.0503	0.0503	mg/kg	05/24/11 22:24		1.01

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	85	%	62-123	05/24/11 22:24	
Dibromofluoromethane	1868-53-7	90	%	52-140	05/24/11 22:24	
1,2-Dichloroethane-D4	17060-07-0	98	%	54-133	05/24/11 22:24	
Toluene-D8	2037-26-5	86	%	63-126	05/24/11 22:24	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-02	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-002	Date Collected: May-17-11 08:09	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/27/11 16:51		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/27/11 16:51		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/27/11 16:51	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/27/11 16:51		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/27/11 16:51		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/27/11 16:51	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/27/11 16:51		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/27/11 16:51		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/27/11 16:51		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/27/11 16:51		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/27/11 16:51		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/27/11 16:51		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/27/11 16:51		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/27/11 16:51		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/27/11 16:51		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/27/11 16:51		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/27/11 16:51		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/27/11 16:51		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-02	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-002	Date Collected: May-17-11 08:09	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/27/11 16:51		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/27/11 16:51		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/27/11 16:51		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/27/11 16:51	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/27/11 16:51		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/27/11 16:51		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/27/11 16:51		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/27/11 16:51		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/27/11 16:51		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/27/11 16:51		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/27/11 16:51		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/27/11 16:51		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/27/11 16:51		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/27/11 16:51		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/27/11 16:51		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/27/11 16:51	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/27/11 16:51		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/27/11 16:51		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	61	%	44-103	05/27/11 16:51	
2-Fluorophenol	367-12-4	53	%	15-111	05/27/11 16:51	
Nitrobenzene-d5	4165-60-0	50	%	45-109	05/27/11 16:51	
Phenol-d6	13127-88-3	59	%	37-105	05/27/11 16:51	
Terphenyl-D14	1718-51-0	85	%	41-118	05/27/11 16:51	
2,4,6-Tribromophenol	118-79-6	51	%	10-124	05/27/11 16:51	
2-Chlorophenol-D4	93951-73-6	55	%	24-110	05/27/11 16:51	
1,2-Dichlorobenzene-D4	2199-69-1	56	%	38-102	05/27/11 16:51	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-03	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-003	Date Collected: May-17-11 08:25	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:25
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.37	1.37	mg/kg	05/24/11 22:51		0.92
Benzene	71-43-2	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Bromobenzene	108-86-1	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Bromochloromethane	74-97-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Bromodichloromethane	75-27-4	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Bromoform	75-25-2	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92
Bromomethane	74-83-9	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
2-Butanone	78-93-3	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
tert-Butylbenzene	98-06-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Sec-Butylbenzene	135-98-8	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
n-Butylbenzene	104-51-8	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Carbon Disulfide	75-15-0	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Carbon Tetrachloride	56-23-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Chlorobenzene	108-90-7	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Chloroethane	75-00-3	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Chloroform	67-66-3	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Chloromethane	74-87-3	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
2-Chlorotoluene	95-49-8	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
4-Chlorotoluene	106-43-4	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,2-Dibromo-3-Chloropropane	96-12-8	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Dibromochloromethane	124-48-1	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,2-Dibromoethane	106-93-4	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Dibromomethane	74-95-3	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,2-Dichlorobenzene	95-50-1	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,3-Dichlorobenzene	541-73-1	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,4-Dichlorobenzene	106-46-7	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Dichlorodifluoromethane	75-71-8	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
1,2-Dichloroethane	107-06-2	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,1-Dichloroethane	75-34-3	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
trans-1,2-dichloroethene	156-60-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
cis-1,2-Dichloroethene	156-59-2	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,1-Dichloroethene	75-35-4	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92
2,2-Dichloropropane	594-20-7	<0.229	0.229	mg/kg	05/24/11 22:51	L1	0.92
1,3-Dichloropropane	142-28-9	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,2-Dichloropropane	78-87-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
trans-1,3-dichloropropene	10061-02-6	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,1-Dichloropropene	563-58-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
cis-1,3-Dichloropropene	10061-01-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Ethylbenzene	100-41-4	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-03	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-003	Date Collected: May-17-11 08:25	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:25
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
2-Hexanone	591-78-6	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Iodomethane (Methyl Iodide)	74-88-4	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Isopropylbenzene	98-82-8	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Naphthalene	91-20-3	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Methylene Chloride	75-09-2	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
4-Methyl-2-Pentanone	108-10-1	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
MTBE	1634-04-4	0.283	0.229	mg/kg	05/24/11 22:51		0.92
n-Propylbenzene	103-65-1	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Styrene	100-42-5	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,1,1,2-Tetrachloroethane	630-20-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,1,2,2-Tetrachloroethane	79-34-5	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92
Tetrachloroethylene	127-18-4	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Toluene	108-88-3	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92
1,2,4-Trichlorobenzene	120-82-1	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,2,3-Trichlorobenzene	87-61-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,1,2-Trichloroethane	79-00-5	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
1,1,1-Trichloroethane	71-55-6	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Trichloroethene	79-01-6	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
Trichlorofluoromethane	75-69-4	<0.458	0.458	mg/kg	05/24/11 22:51	V1	0.92
1,2,3-Trichloropropane	96-18-4	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,2,4-Trimethylbenzene	95-63-6	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
1,3,5-Trimethylbenzene	108-67-8	<0.229	0.229	mg/kg	05/24/11 22:51		0.92
Vinyl Acetate	108-05-4	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
Vinyl Chloride	75-01-4	<0.458	0.458	mg/kg	05/24/11 22:51		0.92
o-Xylene	95-47-6	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92
m,p-Xylenes	179601-23-1	<0.0916	0.0916	mg/kg	05/24/11 22:51		0.92
Total Xylenes	1330-20-7	<0.0458	0.0458	mg/kg	05/24/11 22:51		0.92

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	62-123	05/24/11 22:51	
Dibromofluoromethane	1868-53-7	101	%	52-140	05/24/11 22:51	
1,2-Dichloroethane-D4	17060-07-0	114	%	54-133	05/24/11 22:51	
Toluene-D8	2037-26-5	96	%	63-126	05/24/11 22:51	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-03	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-003	Date Collected: May-17-11 08:25	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/27/11 17:43		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/27/11 17:43		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/27/11 17:43	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/27/11 17:43		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/27/11 17:43		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/27/11 17:43	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/27/11 17:43		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/27/11 17:43		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/27/11 17:43		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/27/11 17:43		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/27/11 17:43		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/27/11 17:43		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/27/11 17:43		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/27/11 17:43		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/27/11 17:43		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/27/11 17:43		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/27/11 17:43		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/27/11 17:43		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-03	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-003	Date Collected: May-17-11 08:25	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/27/11 17:43		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/27/11 17:43		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/27/11 17:43		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/27/11 17:43	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/27/11 17:43		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/27/11 17:43		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/27/11 17:43		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/27/11 17:43		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/27/11 17:43		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/27/11 17:43		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/27/11 17:43		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/27/11 17:43		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/27/11 17:43		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/27/11 17:43		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/27/11 17:43		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/27/11 17:43	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/27/11 17:43		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/27/11 17:43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	72	%	44-103	05/27/11 17:43	
2-Fluorophenol	367-12-4	63	%	15-111	05/27/11 17:43	
Nitrobenzene-d5	4165-60-0	63	%	45-109	05/27/11 17:43	
Phenol-d6	13127-88-3	73	%	37-105	05/27/11 17:43	
Terphenyl-D14	1718-51-0	85	%	41-118	05/27/11 17:43	
2,4,6-Tribromophenol	118-79-6	60	%	10-124	05/27/11 17:43	
2-Chlorophenol-D4	93951-73-6	68	%	24-110	05/27/11 17:43	
1,2-Dichlorobenzene-D4	2199-69-1	61	%	38-102	05/27/11 17:43	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-04	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-004	Date Collected: May-17-11 08:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:40
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.37	1.37	mg/kg	05/24/11 23:17		0.91
Benzene	71-43-2	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Bromobenzene	108-86-1	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Bromochloromethane	74-97-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Bromodichloromethane	75-27-4	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Bromoform	75-25-2	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91
Bromomethane	74-83-9	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
2-Butanone	78-93-3	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
tert-Butylbenzene	98-06-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Sec-Butylbenzene	135-98-8	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
n-Butylbenzene	104-51-8	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Carbon Disulfide	75-15-0	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Carbon Tetrachloride	56-23-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Chlorobenzene	108-90-7	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Chloroethane	75-00-3	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Chloroform	67-66-3	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Chloromethane	74-87-3	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
2-Chlorotoluene	95-49-8	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
4-Chlorotoluene	106-43-4	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,2-Dibromo-3-Chloropropane	96-12-8	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Dibromochloromethane	124-48-1	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,2-Dibromoethane	106-93-4	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Dibromomethane	74-95-3	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,2-Dichlorobenzene	95-50-1	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,3-Dichlorobenzene	541-73-1	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,4-Dichlorobenzene	106-46-7	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Dichlorodifluoromethane	75-71-8	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
1,2-Dichloroethane	107-06-2	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,1-Dichloroethane	75-34-3	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
trans-1,2-dichloroethene	156-60-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
cis-1,2-Dichloroethene	156-59-2	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,1-Dichloroethene	75-35-4	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91
2,2-Dichloropropane	594-20-7	<0.229	0.229	mg/kg	05/24/11 23:17	L1	0.91
1,3-Dichloropropane	142-28-9	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,2-Dichloropropane	78-87-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
trans-1,3-dichloropropene	10061-02-6	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,1-Dichloropropene	563-58-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
cis-1,3-Dichloropropene	10061-01-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Ethylbenzene	100-41-4	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-04	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-004	Date Collected: May-17-11 08:40	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:40
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
2-Hexanone	591-78-6	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Iodomethane (Methyl Iodide)	74-88-4	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Naphthalene	91-20-3	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Isopropylbenzene	98-82-8	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Methylene Chloride	75-09-2	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
4-Methyl-2-Pentanone	108-10-1	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
MTBE	1634-04-4	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
n-Propylbenzene	103-65-1	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Styrene	100-42-5	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,1,1,2-Tetrachloroethane	630-20-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,1,2,2-Tetrachloroethane	79-34-5	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91
Tetrachloroethylene	127-18-4	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Toluene	108-88-3	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91
1,2,4-Trichlorobenzene	120-82-1	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,2,3-Trichlorobenzene	87-61-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,1,2-Trichloroethane	79-00-5	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
1,1,1-Trichloroethane	71-55-6	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Trichloroethene	79-01-6	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
Trichlorofluoromethane	75-69-4	<0.457	0.457	mg/kg	05/24/11 23:17	V1	0.91
1,2,3-Trichloropropane	96-18-4	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,2,4-Trimethylbenzene	95-63-6	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
1,3,5-Trimethylbenzene	108-67-8	<0.229	0.229	mg/kg	05/24/11 23:17		0.91
Vinyl Acetate	108-05-4	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
Vinyl Chloride	75-01-4	<0.457	0.457	mg/kg	05/24/11 23:17		0.91
o-Xylene	95-47-6	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91
m,p-Xylenes	179601-23-1	<0.0914	0.0914	mg/kg	05/24/11 23:17		0.91
Total Xylenes	1330-20-7	<0.0457	0.0457	mg/kg	05/24/11 23:17		0.91

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	62-123	05/24/11 23:17	
Dibromofluoromethane	1868-53-7	99	%	52-140	05/24/11 23:17	
1,2-Dichloroethane-D4	17060-07-0	114	%	54-133	05/24/11 23:17	
Toluene-D8	2037-26-5	100	%	63-126	05/24/11 23:17	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-04	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-004	Date Collected: May-17-11 08:40	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/27/11 18:34		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/27/11 18:34		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/27/11 18:34	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/27/11 18:34		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/27/11 18:34		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/27/11 18:34	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/27/11 18:34		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/27/11 18:34		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/27/11 18:34		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/27/11 18:34		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/27/11 18:34		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/27/11 18:34		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/27/11 18:34		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/27/11 18:34		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/27/11 18:34		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/27/11 18:34		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/27/11 18:34		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/27/11 18:34		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-04	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-004	Date Collected: May-17-11 08:40	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/27/11 18:34		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/27/11 18:34		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/27/11 18:34		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/27/11 18:34	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/27/11 18:34		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/27/11 18:34		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/27/11 18:34		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/27/11 18:34		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/27/11 18:34		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/27/11 18:34		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/27/11 18:34		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/27/11 18:34		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/27/11 18:34		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/27/11 18:34		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/27/11 18:34		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/27/11 18:34	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/27/11 18:34		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/27/11 18:34		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	67	%	44-103	05/27/11 18:34	
2-Fluorophenol	367-12-4	59	%	15-111	05/27/11 18:34	
Nitrobenzene-d5	4165-60-0	64	%	45-109	05/27/11 18:34	
Phenol-d6	13127-88-3	64	%	37-105	05/27/11 18:34	
Terphenyl-D14	1718-51-0	85	%	41-118	05/27/11 18:34	
2,4,6-Tribromophenol	118-79-6	60	%	10-124	05/27/11 18:34	
2-Chlorophenol-D4	93951-73-6	64	%	24-110	05/27/11 18:34	
1,2-Dichlorobenzene-D4	2199-69-1	56	%	38-102	05/27/11 18:34	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-05	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-005	Date Collected: May-17-11 08:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.35	1.35	mg/kg	05/25/11 23:43		0.9
Benzene	71-43-2	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Bromobenzene	108-86-1	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Bromochloromethane	74-97-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Bromodichloromethane	75-27-4	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Bromoform	75-25-2	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9
Bromomethane	74-83-9	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
2-Butanone	78-93-3	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
tert-Butylbenzene	98-06-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Sec-Butylbenzene	135-98-8	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
n-Butylbenzene	104-51-8	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Carbon Disulfide	75-15-0	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Carbon Tetrachloride	56-23-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Chlorobenzene	108-90-7	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Chloroethane	75-00-3	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Chloroform	67-66-3	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Chloromethane	74-87-3	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
2-Chlorotoluene	95-49-8	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
4-Chlorotoluene	106-43-4	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,2-Dibromo-3-Chloropropane	96-12-8	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Dibromochloromethane	124-48-1	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,2-Dibromoethane	106-93-4	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Dibromomethane	74-95-3	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,2-Dichlorobenzene	95-50-1	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,3-Dichlorobenzene	541-73-1	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,4-Dichlorobenzene	106-46-7	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Dichlorodifluoromethane	75-71-8	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
1,2-Dichloroethane	107-06-2	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,1-Dichloroethane	75-34-3	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
trans-1,2-dichloroethene	156-60-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
cis-1,2-Dichloroethene	156-59-2	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,1-Dichloroethene	75-35-4	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9
2,2-Dichloropropane	594-20-7	<0.226	0.226	mg/kg	05/25/11 23:43	L1	0.9
1,3-Dichloropropane	142-28-9	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,2-Dichloropropane	78-87-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
trans-1,3-dichloropropene	10061-02-6	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,1-Dichloropropene	563-58-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
cis-1,3-Dichloropropene	10061-01-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Ethylbenzene	100-41-4	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9

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Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-05	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-005	Date Collected: May-17-11 08:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 08:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
2-Hexanone	591-78-6	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Iodomethane (Methyl Iodide)	74-88-4	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Isopropylbenzene	98-82-8	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Naphthalene	91-20-3	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Methylene Chloride	75-09-2	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
4-Methyl-2-Pentanone	108-10-1	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
MTBE	1634-04-4	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
n-Propylbenzene	103-65-1	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Styrene	100-42-5	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,1,1,2-Tetrachloroethane	630-20-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,1,2,2-Tetrachloroethane	79-34-5	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9
Tetrachloroethylene	127-18-4	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Toluene	108-88-3	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9
1,2,4-Trichlorobenzene	120-82-1	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,2,3-Trichlorobenzene	87-61-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,1,2-Trichloroethane	79-00-5	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
1,1,1-Trichloroethane	71-55-6	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Trichloroethene	79-01-6	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
Trichlorofluoromethane	75-69-4	<0.451	0.451	mg/kg	05/25/11 23:43	V1	0.9
1,2,3-Trichloropropane	96-18-4	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,2,4-Trimethylbenzene	95-63-6	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
1,3,5-Trimethylbenzene	108-67-8	<0.226	0.226	mg/kg	05/25/11 23:43		0.9
Vinyl Acetate	108-05-4	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
Vinyl Chloride	75-01-4	<0.451	0.451	mg/kg	05/25/11 23:43		0.9
o-Xylene	95-47-6	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9
m,p-Xylenes	179601-23-1	<0.0903	0.0903	mg/kg	05/25/11 23:43		0.9
Total Xylenes	1330-20-7	<0.0451	0.0451	mg/kg	05/25/11 23:43		0.9

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	99	%	62-123	05/25/11 23:43	
Dibromofluoromethane	1868-53-7	104	%	52-140	05/25/11 23:43	
1,2-Dichloroethane-D4	17060-07-0	116	%	54-133	05/25/11 23:43	
Toluene-D8	2037-26-5	96	%	63-126	05/25/11 23:43	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-05	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-005	Date Collected: May-17-11 08:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/27/11 19:26		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/27/11 19:26		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/27/11 19:26	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/27/11 19:26		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/27/11 19:26		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/27/11 19:26	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/27/11 19:26		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/27/11 19:26		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/27/11 19:26		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/27/11 19:26		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/27/11 19:26		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/27/11 19:26		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/27/11 19:26		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/27/11 19:26		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/27/11 19:26		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/27/11 19:26		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/27/11 19:26		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/27/11 19:26		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-05	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-005	Date Collected: May-17-11 08:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/27/11 19:26		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/27/11 19:26		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/27/11 19:26		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/27/11 19:26	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/27/11 19:26		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/27/11 19:26		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/27/11 19:26		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/27/11 19:26		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/27/11 19:26		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/27/11 19:26		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/27/11 19:26		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/27/11 19:26		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/27/11 19:26		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/27/11 19:26		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/27/11 19:26		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/27/11 19:26	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/27/11 19:26		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/27/11 19:26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	74	%	44-103	05/27/11 19:26	
2-Fluorophenol	367-12-4	68	%	15-111	05/27/11 19:26	
Nitrobenzene-d5	4165-60-0	67	%	45-109	05/27/11 19:26	
Phenol-d6	13127-88-3	76	%	37-105	05/27/11 19:26	
Terphenyl-D14	1718-51-0	92	%	41-118	05/27/11 19:26	
2,4,6-Tribromophenol	118-79-6	65	%	10-124	05/27/11 19:26	
2-Chlorophenol-D4	93951-73-6	75	%	24-110	05/27/11 19:26	
1,2-Dichlorobenzene-D4	2199-69-1	68	%	38-102	05/27/11 19:26	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: GW-051711-MES-06	Matrix: Ground Water	Date Received: May-17-11 18:39
Lab Sample Id: 416904-006	Date Collected: May-17-11 09:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	
Dilution Analysis:	
Seq#: 856979 Date Analyzed: 05/22/11 03:06 Date Prep: 05/21/11 16:15	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<100	100	ug/L	05/22/11 21:46	D1	5
Benzene	71-43-2	135	2.50	ug/L	05/22/11 21:46	D2	5
Bromobenzene	108-86-1	<7.50	7.50	ug/L	05/22/11 21:46	D1	5
Bromochloromethane	74-97-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Bromodichloromethane	75-27-4	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Bromoform	75-25-2	<5.00	5.00	ug/L	05/22/11 21:46	D1	5
Bromomethane	74-83-9	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
2-Butanone	78-93-3	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
n-Butylbenzene	104-51-8	60.8	12.5	ug/L	05/22/11 21:46	D2	5
Sec-Butylbenzene	135-98-8	23.0	7.50	ug/L	05/22/11 21:46	D2	5
tert-Butylbenzene	98-06-6	<12.5	12.5	ug/L	05/22/11 21:46	D1	5
Carbon Disulfide	75-15-0	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Carbon Tetrachloride	56-23-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Chlorobenzene	108-90-7	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Chloroethane	75-00-3	<20.0	20.0	ug/L	05/22/11 21:46	D1	5
Chloroform	67-66-3	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Chloromethane	74-87-3	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
2-Chlorotoluene	95-49-8	<7.50	7.50	ug/L	05/22/11 21:46	D1	5
4-Chlorotoluene	106-43-4	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
4-Isopropyltoluene	99-87-6	9.00	7.50	ug/L	05/22/11 21:46	D2	5
Dibromochloromethane	124-48-1	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,2-Dibromo-3-Chloropropane	96-12-8	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
1,2-Dibromoethane	106-93-4	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Dibromomethane	74-95-3	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,2-Dichlorobenzene	95-50-1	<7.50	7.50	ug/L	05/22/11 21:46	D1	5
1,3-Dichlorobenzene	541-73-1	<7.50	7.50	ug/L	05/22/11 21:46	D1	5
1,4-Dichlorobenzene	106-46-7	<7.50	7.50	ug/L	05/22/11 21:46	D1	5
Dichlorodifluoromethane	75-71-8	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
1,1-Dichloroethane	75-34-3	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,2-Dichloroethane	107-06-2	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,1-Dichloroethene	75-35-4	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
cis-1,2-Dichloroethene	156-59-2	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
trans-1,2-dichloroethene	156-60-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,2-Dichloropropane	78-87-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,3-Dichloropropane	142-28-9	<5.00	5.00	ug/L	05/22/11 21:46	D1	5
2,2-Dichloropropane	594-20-7	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,1-Dichloropropene	563-58-6	<5.00	5.00	ug/L	05/22/11 21:46	D1	5



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: GW-051711-MES-06	Matrix: Ground Water	Date Received: May-17-11 18:39
Lab Sample Id: 416904-006	Date Collected: May-17-11 09:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
cis-1,3-Dichloropropene	10061-01-5	<5.00	5.00	ug/L	05/22/11 21:46	D1	5
trans-1,3-dichloropropene	10061-02-6	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Ethylbenzene	100-41-4	1010	100	ug/L	05/22/11 03:06	D2	50
Hexachlorobutadiene	87-68-3	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
2-Hexanone	591-78-6	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
Isopropylbenzene	98-82-8	85.2	12.5	ug/L	05/22/11 21:46	D2	5
Methylene Chloride	75-09-2	<15.0	15.0	ug/L	05/22/11 21:46	D1	5
Iodomethane (Methyl Iodide)	74-88-4	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
4-Methyl-2-Pentanone	108-10-1	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
MTBE	1634-04-4	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
Naphthalene	91-20-3	337	25.0	ug/L	05/22/11 21:46	D2	5
n-Propylbenzene	103-65-1	229	10.0	ug/L	05/22/11 21:46	D2	5
Styrene	100-42-5	<5.00	5.00	ug/L	05/22/11 21:46	D1	5
1,1,1,2-Tetrachloroethane	630-20-6	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,1,2,2-Tetrachloroethane	79-34-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Tetrachloroethylene	127-18-4	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Toluene	108-88-3	1500	100	ug/L	05/22/11 03:06	D2	50
Total Trihalomethane		<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,2,3-Trichlorobenzene	87-61-6	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
1,2,4-Trichlorobenzene	120-82-1	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
1,1,1-Trichloroethane	71-55-6	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
1,1,2-Trichloroethane	79-00-5	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Trichloroethene	79-01-6	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Trichlorofluoromethane	75-69-4	<10.0	10.0	ug/L	05/22/11 21:46	D1	5
1,2,3-Trichloropropane	96-18-4	<5.00	5.00	ug/L	05/22/11 21:46	D1	5
1,2,4-Trimethylbenzene	95-63-6	1520	100	ug/L	05/22/11 03:06	D2	50
1,3,5-Trimethylbenzene	108-67-8	361	7.50	ug/L	05/22/11 21:46	D2	5
o-Xylene	95-47-6	1480	50.0	ug/L	05/22/11 03:06	D2	50
m,p-Xylenes	179601-23-1	3140	100	ug/L	05/22/11 03:06	D2	50
Vinyl Acetate	108-05-4	<25.0	25.0	ug/L	05/22/11 21:46	D1	5
Vinyl Chloride	75-01-4	<2.50	2.50	ug/L	05/22/11 21:46	D1	5
Total Xylenes	1330-20-7	4620	50.0	ug/L	05/22/11 03:06	D2	50

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	103	%	70-135	05/22/11 21:46	
Dibromofluoromethane	1868-53-7	97	%	69-133	05/22/11 21:46	
1,2-Dichloroethane-D4	17060-07-0	96	%	66-139	05/22/11 21:46	
Toluene-D8	2037-26-5	90	%	70-130	05/22/11 21:46	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-07	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-007	Date Collected: May-17-11 14:35	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 14:35
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.42	1.42	mg/kg	05/25/11 00:10		0.95
Benzene	71-43-2	0.807	0.0473	mg/kg	05/25/11 00:10		0.95
Bromobenzene	108-86-1	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Bromochloromethane	74-97-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Bromodichloromethane	75-27-4	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Bromoform	75-25-2	<0.0945	0.0945	mg/kg	05/25/11 00:10		0.95
Bromomethane	74-83-9	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
2-Butanone	78-93-3	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
tert-Butylbenzene	98-06-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Sec-Butylbenzene	135-98-8	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
n-Butylbenzene	104-51-8	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Carbon Disulfide	75-15-0	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Carbon Tetrachloride	56-23-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Chlorobenzene	108-90-7	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Chloroethane	75-00-3	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Chloroform	67-66-3	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Chloromethane	74-87-3	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
2-Chlorotoluene	95-49-8	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
4-Chlorotoluene	106-43-4	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,2-Dibromo-3-Chloropropane	96-12-8	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Dibromochloromethane	124-48-1	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,2-Dibromoethane	106-93-4	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Dibromomethane	74-95-3	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,2-Dichlorobenzene	95-50-1	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,3-Dichlorobenzene	541-73-1	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,4-Dichlorobenzene	106-46-7	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Dichlorodifluoromethane	75-71-8	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
1,2-Dichloroethane	107-06-2	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,1-Dichloroethane	75-34-3	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
trans-1,2-dichloroethene	156-60-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
cis-1,2-Dichloroethene	156-59-2	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,1-Dichloroethene	75-35-4	<0.0945	0.0945	mg/kg	05/25/11 00:10		0.95
2,2-Dichloropropane	594-20-7	<0.236	0.236	mg/kg	05/25/11 00:10	L1	0.95
1,3-Dichloropropane	142-28-9	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,2-Dichloropropane	78-87-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
trans-1,3-dichloropropene	10061-02-6	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,1-Dichloropropene	563-58-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
cis-1,3-Dichloropropene	10061-01-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Ethylbenzene	100-41-4	0.302	0.0945	mg/kg	05/25/11 00:10		0.95



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-07	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-007	Date Collected: May-17-11 14:35	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 14:35
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
2-Hexanone	591-78-6	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Iodomethane (Methyl Iodide)	74-88-4	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Naphthalene	91-20-3	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Isopropylbenzene	98-82-8	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Methylene Chloride	75-09-2	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
4-Methyl-2-Pentanone	108-10-1	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
MTBE	1634-04-4	0.403	0.236	mg/kg	05/25/11 00:10		0.95
n-Propylbenzene	103-65-1	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Styrene	100-42-5	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,1,1,2-Tetrachloroethane	630-20-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,1,2,2-Tetrachloroethane	79-34-5	<0.0945	0.0945	mg/kg	05/25/11 00:10		0.95
Tetrachloroethylene	127-18-4	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Toluene	108-88-3	0.295	0.0945	mg/kg	05/25/11 00:10		0.95
1,2,4-Trichlorobenzene	120-82-1	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,2,3-Trichlorobenzene	87-61-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,1,2-Trichloroethane	79-00-5	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
1,1,1-Trichloroethane	71-55-6	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Trichloroethene	79-01-6	<0.0473	0.0473	mg/kg	05/25/11 00:10		0.95
Trichlorofluoromethane	75-69-4	<0.473	0.473	mg/kg	05/25/11 00:10	V1	0.95
1,2,3-Trichloropropane	96-18-4	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,2,4-Trimethylbenzene	95-63-6	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
1,3,5-Trimethylbenzene	108-67-8	<0.236	0.236	mg/kg	05/25/11 00:10		0.95
Vinyl Acetate	108-05-4	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
Vinyl Chloride	75-01-4	<0.473	0.473	mg/kg	05/25/11 00:10		0.95
o-Xylene	95-47-6	0.193	0.0473	mg/kg	05/25/11 00:10		0.95
m,p-Xylenes	179601-23-1	0.431	0.0945	mg/kg	05/25/11 00:10		0.95
Total Xylenes	1330-20-7	0.624	0.0473	mg/kg	05/25/11 00:10		0.95

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	93	%	62-123	05/25/11 00:10	
Dibromofluoromethane	1868-53-7	91	%	52-140	05/25/11 00:10	
1,2-Dichloroethane-D4	17060-07-0	105	%	54-133	05/25/11 00:10	
Toluene-D8	2037-26-5	91	%	63-126	05/25/11 00:10	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-07	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-007	Date Collected: May-17-11 14:35	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/27/11 20:20		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/27/11 20:20		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/27/11 20:20	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/27/11 20:20		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/27/11 20:20		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/27/11 20:20	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/27/11 20:20		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/27/11 20:20		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/27/11 20:20		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/27/11 20:20		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/27/11 20:20		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/27/11 20:20		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/27/11 20:20		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/27/11 20:20		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/27/11 20:20		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/27/11 20:20		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/27/11 20:20		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/27/11 20:20		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-07	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-007	Date Collected: May-17-11 14:35	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/27/11 20:20		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/27/11 20:20		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/27/11 20:20		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/27/11 20:20	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/27/11 20:20		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/27/11 20:20		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/27/11 20:20		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/27/11 20:20		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/27/11 20:20		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/27/11 20:20		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/27/11 20:20		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/27/11 20:20		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/27/11 20:20		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/27/11 20:20		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/27/11 20:20		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/27/11 20:20	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/27/11 20:20		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/27/11 20:20		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	64	%	44-103	05/27/11 20:20	
2-Fluorophenol	367-12-4	46	%	15-111	05/27/11 20:20	
Nitrobenzene-d5	4165-60-0	52	%	45-109	05/27/11 20:20	
Phenol-d6	13127-88-3	51	%	37-105	05/27/11 20:20	
Terphenyl-D14	1718-51-0	86	%	41-118	05/27/11 20:20	
2,4,6-Tribromophenol	118-79-6	42	%	10-124	05/27/11 20:20	
2-Chlorophenol-D4	93951-73-6	51	%	24-110	05/27/11 20:20	
1,2-Dichlorobenzene-D4	2199-69-1	59	%	38-102	05/27/11 20:20	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-08	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-008	Date Collected: May-17-11 14:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 14:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.46	1.46	mg/kg	05/25/11 00:36		0.97
Benzene	71-43-2	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Bromobenzene	108-86-1	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Bromochloromethane	74-97-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Bromodichloromethane	75-27-4	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Bromoform	75-25-2	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97
Bromomethane	74-83-9	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
2-Butanone	78-93-3	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
tert-Butylbenzene	98-06-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Sec-Butylbenzene	135-98-8	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
n-Butylbenzene	104-51-8	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Carbon Disulfide	75-15-0	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Carbon Tetrachloride	56-23-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Chlorobenzene	108-90-7	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Chloroethane	75-00-3	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Chloroform	67-66-3	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Chloromethane	74-87-3	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
2-Chlorotoluene	95-49-8	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
4-Chlorotoluene	106-43-4	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,2-Dibromo-3-Chloropropane	96-12-8	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Dibromochloromethane	124-48-1	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,2-Dibromoethane	106-93-4	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Dibromomethane	74-95-3	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,2-Dichlorobenzene	95-50-1	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,3-Dichlorobenzene	541-73-1	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,4-Dichlorobenzene	106-46-7	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Dichlorodifluoromethane	75-71-8	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
1,2-Dichloroethane	107-06-2	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,1-Dichloroethane	75-34-3	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
trans-1,2-dichloroethene	156-60-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
cis-1,2-Dichloroethene	156-59-2	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,1-Dichloroethene	75-35-4	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97
2,2-Dichloropropane	594-20-7	<0.243	0.243	mg/kg	05/25/11 00:36	L1	0.97
1,3-Dichloropropane	142-28-9	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,2-Dichloropropane	78-87-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
trans-1,3-dichloropropene	10061-02-6	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,1-Dichloropropene	563-58-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
cis-1,3-Dichloropropene	10061-01-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Ethylbenzene	100-41-4	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97

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Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-08	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-008	Date Collected: May-17-11 14:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 14:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
2-Hexanone	591-78-6	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Iodomethane (Methyl Iodide)	74-88-4	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Naphthalene	91-20-3	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Isopropylbenzene	98-82-8	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Methylene Chloride	75-09-2	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
4-Methyl-2-Pentanone	108-10-1	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
MTBE	1634-04-4	0.271	0.243	mg/kg	05/25/11 00:36		0.97
n-Propylbenzene	103-65-1	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Styrene	100-42-5	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,1,1,2-Tetrachloroethane	630-20-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,1,2,2-Tetrachloroethane	79-34-5	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97
Tetrachloroethylene	127-18-4	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Toluene	108-88-3	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97
1,2,4-Trichlorobenzene	120-82-1	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,2,3-Trichlorobenzene	87-61-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,1,2-Trichloroethane	79-00-5	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
1,1,1-Trichloroethane	71-55-6	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Trichloroethene	79-01-6	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
Trichlorofluoromethane	75-69-4	<0.485	0.485	mg/kg	05/25/11 00:36	V1	0.97
1,2,3-Trichloropropane	96-18-4	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,2,4-Trimethylbenzene	95-63-6	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
1,3,5-Trimethylbenzene	108-67-8	<0.243	0.243	mg/kg	05/25/11 00:36		0.97
Vinyl Acetate	108-05-4	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
Vinyl Chloride	75-01-4	<0.485	0.485	mg/kg	05/25/11 00:36		0.97
o-Xylene	95-47-6	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97
m,p-Xylenes	179601-23-1	<0.0971	0.0971	mg/kg	05/25/11 00:36		0.97
Total Xylenes	1330-20-7	<0.0485	0.0485	mg/kg	05/25/11 00:36		0.97

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	86	%	62-123	05/25/11 00:36	
Dibromofluoromethane	1868-53-7	93	%	52-140	05/25/11 00:36	
1,2-Dichloroethane-D4	17060-07-0	103	%	54-133	05/25/11 00:36	
Toluene-D8	2037-26-5	88	%	63-126	05/25/11 00:36	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-08	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-008	Date Collected: May-17-11 14:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/27/11 21:12		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/27/11 21:12		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/27/11 21:12	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/27/11 21:12		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/27/11 21:12		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/27/11 21:12	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/27/11 21:12		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/27/11 21:12		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/27/11 21:12		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/27/11 21:12		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/27/11 21:12		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/27/11 21:12		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/27/11 21:12		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/27/11 21:12		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/27/11 21:12		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/27/11 21:12		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/27/11 21:12		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/27/11 21:12		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-08	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-008	Date Collected: May-17-11 14:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/27/11 21:12		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/27/11 21:12		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/27/11 21:12		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/27/11 21:12	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/27/11 21:12		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/27/11 21:12		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/27/11 21:12		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/27/11 21:12		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/27/11 21:12		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/27/11 21:12		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/27/11 21:12		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/27/11 21:12		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/27/11 21:12		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/27/11 21:12		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/27/11 21:12		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/27/11 21:12	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/27/11 21:12		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/27/11 21:12		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	69	%	44-103	05/27/11 21:12	
2-Fluorophenol	367-12-4	62	%	15-111	05/27/11 21:12	
Nitrobenzene-d5	4165-60-0	61	%	45-109	05/27/11 21:12	
Phenol-d6	13127-88-3	69	%	37-105	05/27/11 21:12	
Terphenyl-D14	1718-51-0	85	%	41-118	05/27/11 21:12	
2,4,6-Tribromophenol	118-79-6	55	%	10-124	05/27/11 21:12	
2-Chlorophenol-D4	93951-73-6	66	%	24-110	05/27/11 21:12	
1,2-Dichlorobenzene-D4	2199-69-1	61	%	38-102	05/27/11 21:12	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-09	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-009	Date Collected: May-17-11 15:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 15:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.55	1.55	mg/kg	05/25/11 01:02		1.03
Benzene	71-43-2	0.134	0.0515	mg/kg	05/25/11 01:02		1.03
Bromobenzene	108-86-1	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Bromochloromethane	74-97-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Bromodichloromethane	75-27-4	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Bromoform	75-25-2	<0.103	0.103	mg/kg	05/25/11 01:02		1.03
Bromomethane	74-83-9	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
2-Butanone	78-93-3	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
tert-Butylbenzene	98-06-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Sec-Butylbenzene	135-98-8	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
n-Butylbenzene	104-51-8	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Carbon Disulfide	75-15-0	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Carbon Tetrachloride	56-23-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Chlorobenzene	108-90-7	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Chloroethane	75-00-3	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Chloroform	67-66-3	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Chloromethane	74-87-3	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
2-Chlorotoluene	95-49-8	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
4-Chlorotoluene	106-43-4	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,2-Dibromo-3-Chloropropane	96-12-8	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Dibromochloromethane	124-48-1	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,2-Dibromoethane	106-93-4	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Dibromomethane	74-95-3	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,2-Dichlorobenzene	95-50-1	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,3-Dichlorobenzene	541-73-1	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,4-Dichlorobenzene	106-46-7	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Dichlorodifluoromethane	75-71-8	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
1,2-Dichloroethane	107-06-2	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,1-Dichloroethane	75-34-3	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
trans-1,2-dichloroethene	156-60-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
cis-1,2-Dichloroethene	156-59-2	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,1-Dichloroethene	75-35-4	<0.103	0.103	mg/kg	05/25/11 01:02		1.03
2,2-Dichloropropane	594-20-7	<0.258	0.258	mg/kg	05/25/11 01:02	L1	1.03
1,3-Dichloropropane	142-28-9	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,2-Dichloropropane	78-87-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
trans-1,3-dichloropropene	10061-02-6	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,1-Dichloropropene	563-58-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
cis-1,3-Dichloropropene	10061-01-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Ethylbenzene	100-41-4	<0.103	0.103	mg/kg	05/25/11 01:02		1.03



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-09	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-009	Date Collected: May-17-11 15:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A	% Moisture:
Tech: OEM	Date Prep: May-17-11 15:00	Basis: Wet Weight
Analyst: OEM		
Seq Number: 857697		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
2-Hexanone	591-78-6	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Iodomethane (Methyl Iodide)	74-88-4	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Naphthalene	91-20-3	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Isopropylbenzene	98-82-8	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Methylene Chloride	75-09-2	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
4-Methyl-2-Pentanone	108-10-1	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
MTBE	1634-04-4	0.420	0.258	mg/kg	05/25/11 01:02		1.03
n-Propylbenzene	103-65-1	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Styrene	100-42-5	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,1,1,2-Tetrachloroethane	630-20-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,1,2,2-Tetrachloroethane	79-34-5	<0.103	0.103	mg/kg	05/25/11 01:02		1.03
Tetrachloroethylene	127-18-4	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Toluene	108-88-3	<0.103	0.103	mg/kg	05/25/11 01:02		1.03
1,2,4-Trichlorobenzene	120-82-1	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,2,3-Trichlorobenzene	87-61-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,1,2-Trichloroethane	79-00-5	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
1,1,1-Trichloroethane	71-55-6	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Trichloroethene	79-01-6	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
Trichlorofluoromethane	75-69-4	<0.515	0.515	mg/kg	05/25/11 01:02	V1	1.03
1,2,3-Trichloropropane	96-18-4	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,2,4-Trimethylbenzene	95-63-6	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
1,3,5-Trimethylbenzene	108-67-8	<0.258	0.258	mg/kg	05/25/11 01:02		1.03
Vinyl Acetate	108-05-4	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
Vinyl Chloride	75-01-4	<0.515	0.515	mg/kg	05/25/11 01:02		1.03
o-Xylene	95-47-6	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03
m,p-Xylenes	179601-23-1	<0.103	0.103	mg/kg	05/25/11 01:02		1.03
Total Xylenes	1330-20-7	<0.0515	0.0515	mg/kg	05/25/11 01:02		1.03

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	97	%	62-123	05/25/11 01:02	
Dibromofluoromethane	1868-53-7	101	%	52-140	05/25/11 01:02	
1,2-Dichloroethane-D4	17060-07-0	118	%	54-133	05/25/11 01:02	
Toluene-D8	2037-26-5	97	%	63-126	05/25/11 01:02	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-09	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-009	Date Collected: May-17-11 15:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 16:45		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 16:45		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 16:45	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 16:45		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 16:45		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 16:45	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 16:45		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 16:45		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 16:45		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 16:45		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 16:45		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 16:45		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 16:45		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 16:45		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 16:45		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 16:45		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 16:45		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 16:45		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-09	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-009	Date Collected: May-17-11 15:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 16:45		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 16:45		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 16:45		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 16:45	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 16:45		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 16:45		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 16:45		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 16:45		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 16:45		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 16:45		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 16:45		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 16:45		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 16:45		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 16:45		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 16:45		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 16:45	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 16:45		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 16:45		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	64	%	44-103	05/31/11 16:45	
2-Fluorophenol	367-12-4	54	%	15-111	05/31/11 16:45	
Nitrobenzene-d5	4165-60-0	42	%	45-109	05/31/11 16:45	S6
Phenol-d6	13127-88-3	57	%	37-105	05/31/11 16:45	
Terphenyl-D14	1718-51-0	83	%	41-118	05/31/11 16:45	
2,4,6-Tribromophenol	118-79-6	51	%	10-124	05/31/11 16:45	
2-Chlorophenol-D4	93951-73-6	54	%	24-110	05/31/11 16:45	
1,2-Dichlorobenzene-D4	2199-69-1	51	%	38-102	05/31/11 16:45	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-10	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-010	Date Collected: May-17-11 15:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 15:10
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.30	1.30	mg/kg	05/25/11 19:36		0.87
Benzene	71-43-2	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Bromobenzene	108-86-1	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Bromochloromethane	74-97-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Bromodichloromethane	75-27-4	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Bromoform	75-25-2	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87
Bromomethane	74-83-9	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
2-Butanone	78-93-3	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
tert-Butylbenzene	98-06-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Sec-Butylbenzene	135-98-8	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
n-Butylbenzene	104-51-8	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Carbon Disulfide	75-15-0	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Carbon Tetrachloride	56-23-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Chlorobenzene	108-90-7	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Chloroethane	75-00-3	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Chloroform	67-66-3	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Chloromethane	74-87-3	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
2-Chlorotoluene	95-49-8	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
4-Chlorotoluene	106-43-4	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,2-Dibromo-3-Chloropropane	96-12-8	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Dibromochloromethane	124-48-1	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,2-Dibromoethane	106-93-4	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Dibromomethane	74-95-3	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,2-Dichlorobenzene	95-50-1	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,3-Dichlorobenzene	541-73-1	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,4-Dichlorobenzene	106-46-7	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Dichlorodifluoromethane	75-71-8	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
1,2-Dichloroethane	107-06-2	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,1-Dichloroethane	75-34-3	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
trans-1,2-dichloroethene	156-60-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
cis-1,2-Dichloroethene	156-59-2	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,1-Dichloroethene	75-35-4	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87
2,2-Dichloropropane	594-20-7	<0.217	0.217	mg/kg	05/25/11 19:36	L1	0.87
1,3-Dichloropropane	142-28-9	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,2-Dichloropropane	78-87-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
trans-1,3-dichloropropene	10061-02-6	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,1-Dichloropropene	563-58-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
cis-1,3-Dichloropropene	10061-01-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Ethylbenzene	100-41-4	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-10	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-010	Date Collected: May-17-11 15:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 15:10
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
2-Hexanone	591-78-6	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Iodomethane (Methyl Iodide)	74-88-4	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Naphthalene	91-20-3	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Isopropylbenzene	98-82-8	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Methylene Chloride	75-09-2	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
4-Methyl-2-Pentanone	108-10-1	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
MTBE	1634-04-4	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
n-Propylbenzene	103-65-1	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Styrene	100-42-5	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,1,1,2-Tetrachloroethane	630-20-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,1,2,2-Tetrachloroethane	79-34-5	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87
Tetrachloroethylene	127-18-4	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Toluene	108-88-3	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87
1,2,4-Trichlorobenzene	120-82-1	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,2,3-Trichlorobenzene	87-61-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,1,2-Trichloroethane	79-00-5	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
1,1,1-Trichloroethane	71-55-6	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Trichloroethene	79-01-6	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
Trichlorofluoromethane	75-69-4	<0.434	0.434	mg/kg	05/25/11 19:36	V1	0.87
1,2,3-Trichloropropane	96-18-4	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,2,4-Trimethylbenzene	95-63-6	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
1,3,5-Trimethylbenzene	108-67-8	<0.217	0.217	mg/kg	05/25/11 19:36		0.87
Vinyl Acetate	108-05-4	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
Vinyl Chloride	75-01-4	<0.434	0.434	mg/kg	05/25/11 19:36		0.87
o-Xylene	95-47-6	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87
m,p-Xylenes	179601-23-1	<0.0868	0.0868	mg/kg	05/25/11 19:36		0.87
Total Xylenes	1330-20-7	<0.0434	0.0434	mg/kg	05/25/11 19:36		0.87

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	78	%	62-123	05/25/11 19:36	
Dibromofluoromethane	1868-53-7	86	%	52-140	05/25/11 19:36	
1,2-Dichloroethane-D4	17060-07-0	99	%	54-133	05/25/11 19:36	
Toluene-D8	2037-26-5	86	%	63-126	05/25/11 19:36	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-10	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-010	Date Collected: May-17-11 15:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 17:30		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 17:30		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 17:30	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 17:30		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 17:30		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 17:30	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 17:30		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 17:30		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 17:30		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 17:30		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 17:30		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 17:30		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 17:30		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 17:30		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 17:30		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 17:30		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 17:30		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 17:30		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-10	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-010	Date Collected: May-17-11 15:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 17:30		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 17:30		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 17:30		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 17:30	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 17:30		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 17:30		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 17:30		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 17:30		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 17:30		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 17:30		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 17:30		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 17:30		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 17:30		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 17:30		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 17:30		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 17:30	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 17:30		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 17:30		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	71	%	44-103	05/31/11 17:30	
2-Fluorophenol	367-12-4	60	%	15-111	05/31/11 17:30	
Nitrobenzene-d5	4165-60-0	59	%	45-109	05/31/11 17:30	
Phenol-d6	13127-88-3	66	%	37-105	05/31/11 17:30	
Terphenyl-D14	1718-51-0	87	%	41-118	05/31/11 17:30	
2,4,6-Tribromophenol	118-79-6	54	%	10-124	05/31/11 17:30	
2-Chlorophenol-D4	93951-73-6	65	%	24-110	05/31/11 17:30	
1,2-Dichlorobenzene-D4	2199-69-1	55	%	38-102	05/31/11 17:30	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-11	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-011	Date Collected: May-17-11 15:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 15:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.48	1.48	mg/kg	05/25/11 01:55		0.98
Benzene	71-43-2	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Bromobenzene	108-86-1	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Bromochloromethane	74-97-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Bromodichloromethane	75-27-4	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Bromoform	75-25-2	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98
Bromomethane	74-83-9	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
2-Butanone	78-93-3	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
tert-Butylbenzene	98-06-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Sec-Butylbenzene	135-98-8	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
n-Butylbenzene	104-51-8	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Carbon Disulfide	75-15-0	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Carbon Tetrachloride	56-23-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Chlorobenzene	108-90-7	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Chloroethane	75-00-3	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Chloroform	67-66-3	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Chloromethane	74-87-3	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
2-Chlorotoluene	95-49-8	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
4-Chlorotoluene	106-43-4	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,2-Dibromo-3-Chloropropane	96-12-8	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Dibromochloromethane	124-48-1	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,2-Dibromoethane	106-93-4	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Dibromomethane	74-95-3	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,2-Dichlorobenzene	95-50-1	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,3-Dichlorobenzene	541-73-1	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,4-Dichlorobenzene	106-46-7	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Dichlorodifluoromethane	75-71-8	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
1,2-Dichloroethane	107-06-2	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,1-Dichloroethane	75-34-3	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
trans-1,2-dichloroethene	156-60-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
cis-1,2-Dichloroethene	156-59-2	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,1-Dichloroethene	75-35-4	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98
2,2-Dichloropropane	594-20-7	<0.246	0.246	mg/kg	05/25/11 01:55	L1	0.98
1,3-Dichloropropane	142-28-9	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,2-Dichloropropane	78-87-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
trans-1,3-dichloropropene	10061-02-6	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,1-Dichloropropene	563-58-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
cis-1,3-Dichloropropene	10061-01-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Ethylbenzene	100-41-4	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-11	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-011	Date Collected: May-17-11 15:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-17-11 15:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
2-Hexanone	591-78-6	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Iodomethane (Methyl Iodide)	74-88-4	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Naphthalene	91-20-3	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Isopropylbenzene	98-82-8	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Methylene Chloride	75-09-2	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
4-Methyl-2-Pentanone	108-10-1	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
MTBE	1634-04-4	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
n-Propylbenzene	103-65-1	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Styrene	100-42-5	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,1,1,2-Tetrachloroethane	630-20-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,1,2,2-Tetrachloroethane	79-34-5	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98
Tetrachloroethylene	127-18-4	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Toluene	108-88-3	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98
1,2,4-Trichlorobenzene	120-82-1	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,2,3-Trichlorobenzene	87-61-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,1,2-Trichloroethane	79-00-5	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
1,1,1-Trichloroethane	71-55-6	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Trichloroethene	79-01-6	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
Trichlorofluoromethane	75-69-4	<0.492	0.492	mg/kg	05/25/11 01:55	V1	0.98
1,2,3-Trichloropropane	96-18-4	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,2,4-Trimethylbenzene	95-63-6	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
1,3,5-Trimethylbenzene	108-67-8	<0.246	0.246	mg/kg	05/25/11 01:55		0.98
Vinyl Acetate	108-05-4	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
Vinyl Chloride	75-01-4	<0.492	0.492	mg/kg	05/25/11 01:55		0.98
o-Xylene	95-47-6	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98
m,p-Xylenes	179601-23-1	<0.0984	0.0984	mg/kg	05/25/11 01:55		0.98
Total Xylenes	1330-20-7	<0.0492	0.0492	mg/kg	05/25/11 01:55		0.98

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	99	%	62-123	05/25/11 01:55	
Dibromofluoromethane	1868-53-7	102	%	52-140	05/25/11 01:55	
1,2-Dichloroethane-D4	17060-07-0	119	%	54-133	05/25/11 01:55	
Toluene-D8	2037-26-5	96	%	63-126	05/25/11 01:55	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-11	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-011	Date Collected: May-17-11 15:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/31/11 18:15		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/31/11 18:15		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/31/11 18:15	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/31/11 18:15		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/31/11 18:15		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/31/11 18:15	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/31/11 18:15		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/31/11 18:15		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/31/11 18:15		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/31/11 18:15		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/31/11 18:15		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/31/11 18:15		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/31/11 18:15		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/31/11 18:15		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/31/11 18:15		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/31/11 18:15		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/31/11 18:15		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/31/11 18:15		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: S-051711-MES-11	Matrix: Soil	Date Received: May-17-11 18:39
Lab Sample Id: 416904-011	Date Collected: May-17-11 15:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/31/11 18:15		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/31/11 18:15		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/31/11 18:15		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/31/11 18:15	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/31/11 18:15		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/31/11 18:15		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/31/11 18:15		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/31/11 18:15		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/31/11 18:15		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/31/11 18:15		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/31/11 18:15		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/31/11 18:15		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/31/11 18:15		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/31/11 18:15		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/31/11 18:15		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/31/11 18:15	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/31/11 18:15		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/31/11 18:15		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	67	%	44-103	05/31/11 18:15	
2-Fluorophenol	367-12-4	61	%	15-111	05/31/11 18:15	
Nitrobenzene-d5	4165-60-0	54	%	45-109	05/31/11 18:15	
Phenol-d6	13127-88-3	65	%	37-105	05/31/11 18:15	
Terphenyl-D14	1718-51-0	86	%	41-118	05/31/11 18:15	
2,4,6-Tribromophenol	118-79-6	55	%	10-124	05/31/11 18:15	
2-Chlorophenol-D4	93951-73-6	62	%	24-110	05/31/11 18:15	
1,2-Dichlorobenzene-D4	2199-69-1	48	%	38-102	05/31/11 18:15	



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-17-11 18:39
Lab Sample Id: 416904-012	Date Collected: May-17-11 09:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	05/21/11 22:11		1
Benzene	71-43-2	<0.500	0.500	ug/L	05/21/11 22:11		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/21/11 22:11		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/21/11 22:11		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/21/11 22:11		1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/21/11 22:11		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/21/11 22:11		1
2-Butanone	78-93-3	<5.00	5.00	ug/L	05/21/11 22:11		1
n-Butylbenzene	104-51-8	<2.50	2.50	ug/L	05/21/11 22:11		1
Sec-Butylbenzene	135-98-8	<1.50	1.50	ug/L	05/21/11 22:11		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/21/11 22:11		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	05/21/11 22:11		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/21/11 22:11		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/21/11 22:11		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/21/11 22:11		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/21/11 22:11		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/21/11 22:11		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/21/11 22:11		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/21/11 22:11		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	05/21/11 22:11		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/21/11 22:11		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/21/11 22:11		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/21/11 22:11		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/21/11 22:11		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/21/11 22:11		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/21/11 22:11		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/21/11 22:11		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/21/11 22:11		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/21/11 22:11		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	05/21/11 22:11		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/21/11 22:11		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/21/11 22:11		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/21/11 22:11		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/21/11 22:11		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/21/11 22:11		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/21/11 22:11		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/21/11 22:11		1
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/21/11 22:11		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/21/11 22:11		1
Ethylbenzene	100-41-4	<2.00	2.00	ug/L	05/21/11 22:11		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416904

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-17-11 18:39
Lab Sample Id: 416904-012	Date Collected: May-17-11 09:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/21/11 22:11		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	05/21/11 22:11		1
Isopropylbenzene	98-82-8	<2.50	2.50	ug/L	05/21/11 22:11		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/21/11 22:11		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/21/11 22:11		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/21/11 22:11		1
MTBE	1634-04-4	<2.00	2.00	ug/L	05/21/11 22:11		1
Naphthalene	91-20-3	<5.00	5.00	ug/L	05/21/11 22:11		1
n-Propylbenzene	103-65-1	<2.00	2.00	ug/L	05/21/11 22:11		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/21/11 22:11		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/21/11 22:11		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/21/11 22:11		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/21/11 22:11		1
Toluene	108-88-3	<2.00	2.00	ug/L	05/21/11 22:11		1
Total Trihalomethane		<0.500	0.500	ug/L	05/21/11 22:11		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/21/11 22:11		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/21/11 22:11		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/21/11 22:11		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/21/11 22:11		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/21/11 22:11		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/21/11 22:11		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/21/11 22:11		1
1,2,4-Trimethylbenzene	95-63-6	<2.00	2.00	ug/L	05/21/11 22:11		1
1,3,5-Trimethylbenzene	108-67-8	<1.50	1.50	ug/L	05/21/11 22:11		1
o-Xylene	95-47-6	<1.00	1.00	ug/L	05/21/11 22:11		1
m,p-Xylenes	179601-23-1	<2.00	2.00	ug/L	05/21/11 22:11		1
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/21/11 22:11		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/21/11 22:11		1
Total Xylenes	1330-20-7	<1.00	1.00	ug/L	05/21/11 22:11		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	120	%	70-135	05/21/11 22:11	
Dibromofluoromethane	1868-53-7	107	%	69-133	05/21/11 22:11	
1,2-Dichloroethane-D4	17060-07-0	106	%	66-139	05/21/11 22:11	
Toluene-D8	2037-26-5	98	%	70-130	05/21/11 22:11	

Surrogate Recoveries

Project Name: Tucson Fire Department HQUST Site

Work Orders : 416904,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BLK

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 19:30	
Dibromofluoromethane	107	69-133	%	05/22/2011 19:30	
1,2-Dichloroethane-D4	104	66-139	%	05/22/2011 19:30	
Toluene-D8	85	70-130	%	05/22/2011 19:30	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BKS

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 19:53	
Dibromofluoromethane	100	69-133	%	05/22/2011 19:53	
1,2-Dichloroethane-D4	100	66-139	%	05/22/2011 19:53	
Toluene-D8	90	70-130	%	05/22/2011 19:53	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BSD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 20:15	
Dibromofluoromethane	99	69-133	%	05/22/2011 20:15	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 20:15	
Toluene-D8	90	70-130	%	05/22/2011 20:15	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 S

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 21:01	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:01	
1,2-Dichloroethane-D4	95	66-139	%	05/22/2011 21:01	
Toluene-D8	89	70-130	%	05/22/2011 21:01	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 SD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 21:24	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:24	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 21:24	
Toluene-D8	90	70-130	%	05/22/2011 21:24	

Surrogate Recoveries

Project Name: Tucson Fire Department HQUST Site

Work Orders : 416904,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BLK

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/21/2011 17:16	
Dibromofluoromethane	100	69-133	%	05/21/2011 17:16	
1,2-Dichloroethane-D4	98	66-139	%	05/21/2011 17:16	
Toluene-D8	85	70-130	%	05/21/2011 17:16	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BKS

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 19:09	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:09	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:09	
Toluene-D8	85	70-130	%	05/21/2011 19:09	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BSD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	104	70-135	%	05/21/2011 19:32	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:32	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:32	
Toluene-D8	84	70-130	%	05/21/2011 19:32	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 S

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 23:19	
Dibromofluoromethane	105	69-133	%	05/21/2011 23:19	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:19	
Toluene-D8	86	70-130	%	05/21/2011 23:19	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 SD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	105	70-135	%	05/21/2011 23:42	
Dibromofluoromethane	107	69-133	%	05/21/2011 23:42	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:42	
Toluene-D8	84	70-130	%	05/21/2011 23:42	

Surrogate Recoveries

Project Name: Tucson Fire Department HQUST Site

Work Orders : 416904,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BLK

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	108	62-123	%	05/24/2011 20:39	
Dibromofluoromethane	100	52-140	%	05/24/2011 20:39	
1,2-Dichloroethane-D4	123	54-133	%	05/24/2011 20:39	
Toluene-D8	104	63-126	%	05/24/2011 20:39	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BKS

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	62-123	%	05/24/2011 21:05	
Dibromofluoromethane	103	52-140	%	05/24/2011 21:05	
1,2-Dichloroethane-D4	118	54-133	%	05/24/2011 21:05	
Toluene-D8	100	63-126	%	05/24/2011 21:05	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BSD

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	100	62-123	%	05/24/2011 21:31	
Dibromofluoromethane	105	52-140	%	05/24/2011 21:31	
1,2-Dichloroethane-D4	117	54-133	%	05/24/2011 21:31	
Toluene-D8	99	63-126	%	05/24/2011 21:31	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 S

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:23	
Dibromofluoromethane	86	52-140	%	05/25/2011 21:23	
1,2-Dichloroethane-D4	93	54-133	%	05/25/2011 21:23	
Toluene-D8	82	63-126	%	05/25/2011 21:23	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 SD

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:50	
Dibromofluoromethane	78	52-140	%	05/25/2011 21:50	
1,2-Dichloroethane-D4	87	54-133	%	05/25/2011 21:50	
Toluene-D8	81	63-126	%	05/25/2011 21:50	

Surrogate Recoveries

Project Name: Tucson Fire Department HQUST Site

Work Orders : 416904,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BLK

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	71	44-103	%	05/27/2011 11:38	
2-Fluorophenol	65	15-111	%	05/27/2011 11:38	
Nitrobenzene-d5	69	45-109	%	05/27/2011 11:38	
Phenol-d6	69	37-105	%	05/27/2011 11:38	
Terphenyl-D14	87	41-118	%	05/27/2011 11:38	
2,4,6-Tribromophenol	53	10-124	%	05/27/2011 11:38	
2-Chlorophenol-D4	70	24-110	%	05/27/2011 11:38	
1,2-Dichlorobenzene-D4	70	38-102	%	05/27/2011 11:38	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BKS

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	80	44-103	%	05/27/2011 12:29	
2-Fluorophenol	67	15-111	%	05/27/2011 12:29	
Nitrobenzene-d5	76	45-109	%	05/27/2011 12:29	
Phenol-d6	75	37-105	%	05/27/2011 12:29	
Terphenyl-D14	91	41-118	%	05/27/2011 12:29	
2,4,6-Tribromophenol	73	10-124	%	05/27/2011 12:29	
2-Chlorophenol-D4	73	24-110	%	05/27/2011 12:29	
1,2-Dichlorobenzene-D4	74	38-102	%	05/27/2011 12:29	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BSD

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	85	44-103	%	05/27/2011 13:21	
2-Fluorophenol	76	15-111	%	05/27/2011 13:21	
Nitrobenzene-d5	85	45-109	%	05/27/2011 13:21	
Phenol-d6	81	37-105	%	05/27/2011 13:21	
Terphenyl-D14	94	41-118	%	05/27/2011 13:21	
2,4,6-Tribromophenol	78	10-124	%	05/27/2011 13:21	
2-Chlorophenol-D4	81	24-110	%	05/27/2011 13:21	
1,2-Dichlorobenzene-D4	81	38-102	%	05/27/2011 13:21	



City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

MB Sample Id: 603413-1-BLK

Matrix: Water

LCS Sample Id: 603413-1-BKS

Prep Method: SW5030C

Date Prep: 05/22/2011

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	39.0	98	37.1	93	55-165	5	28	ug/L	05/22/11 19:53	
Benzene	<0.500	20	19.5	98	20.0	100	70-130	3	20	ug/L	05/22/11 19:53	
Bromobenzene	<1.50	20	17.8	89	19.2	96	70-130	8	20	ug/L	05/22/11 19:53	
Bromochloromethane	<0.500	20	20.4	102	20.4	102	67-125	0	24	ug/L	05/22/11 19:53	
Bromodichloromethane	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/22/11 19:53	
Bromoform	<1.00	20	20.4	102	21.2	106	69-130	4	20	ug/L	05/22/11 19:53	
Bromomethane	<5.00	20	20.9	105	22.7	114	58-138	8	25	ug/L	05/22/11 19:53	
2-Butanone	<5.00	40	43.1	108	40.4	101	58-146	6	27	ug/L	05/22/11 19:53	
n-Butylbenzene	<2.50	20	19.1	96	20.4	102	58-128	7	20	ug/L	05/22/11 19:53	
Sec-Butylbenzene	<1.50	20	19.1	96	20.5	103	61-133	7	20	ug/L	05/22/11 19:53	
tert-Butylbenzene	<2.50	20	19.1	96	20.7	104	65-128	8	20	ug/L	05/22/11 19:53	
Carbon Disulfide	<0.500	20	22.1	111	22.8	114	59-138	3	22	ug/L	05/22/11 19:53	
Carbon Tetrachloride	<0.500	20	20.6	103	21.8	109	57-140	6	21	ug/L	05/22/11 19:53	
Chlorobenzene	<0.500	20	18.5	93	19.4	97	70-130	5	20	ug/L	05/22/11 19:53	
Chloroethane	<4.00	20	17.3	87	17.5	88	60-146	1	24	ug/L	05/22/11 19:53	
Chloroform	<0.500	20	19.7	99	20.0	100	66-128	2	24	ug/L	05/22/11 19:53	
Chloromethane	<5.00	20	18.9	95	18.4	92	47-144	3	26	ug/L	05/22/11 19:53	
2-Chlorotoluene	<1.50	20	18.2	91	19.2	96	70-130	5	20	ug/L	05/22/11 19:53	
4-Chlorotoluene	<2.00	20	18.8	94	19.7	99	70-130	5	28	ug/L	05/22/11 19:53	
4-Isopropyltoluene	<1.50	20	19.6	98	21.3	107	67-135	8	20	ug/L	05/22/11 19:53	
Dibromochloromethane	<0.500	20	20.7	104	21.5	108	70-130	4	20	ug/L	05/22/11 19:53	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.2	101	60-128	1	21	ug/L	05/22/11 19:53	
1,2-Dibromoethane	<0.500	20	20.3	102	20.8	104	70-130	2	20	ug/L	05/22/11 19:53	
Dibromomethane	<0.500	20	20.0	100	20.6	103	70-130	3	23	ug/L	05/22/11 19:53	
1,2-Dichlorobenzene	<1.50	20	19.1	96	20.3	102	70-130	6	20	ug/L	05/22/11 19:53	
1,3-Dichlorobenzene	<1.50	20	19.0	95	20.2	101	70-130	6	20	ug/L	05/22/11 19:53	
1,4-Dichlorobenzene	<1.50	20	17.9	90	19.2	96	70-130	7	20	ug/L	05/22/11 19:53	
Dichlorodifluoromethane	<2.00	20	16.3	82	17.0	85	9-134	4	27	ug/L	05/22/11 19:53	
1,1-Dichloroethane	<0.500	20	20.5	103	20.8	104	66-132	1	20	ug/L	05/22/11 19:53	
1,2-Dichloroethane	<0.500	20	20.5	103	20.1	101	70-130	2	20	ug/L	05/22/11 19:53	
1,1-Dichloroethene	<0.500	20	21.1	106	21.4	107	58-144	1	21	ug/L	05/22/11 19:53	
cis-1,2-Dichloroethene	<0.500	20	17.6	88	17.9	90	67-129	2	24	ug/L	05/22/11 19:53	
trans-1,2-dichloroethene	<0.500	20	19.6	98	20.0	100	63-137	2	21	ug/L	05/22/11 19:53	
1,2-Dichloropropane	<0.500	20	19.4	97	19.9	100	70-130	3	20	ug/L	05/22/11 19:53	
1,3-Dichloropropane	<1.00	20	20.2	101	21.1	106	70-130	4	20	ug/L	05/22/11 19:53	
2,2-Dichloropropane	<0.500	20	21.2	106	21.9	110	60-141	3	24	ug/L	05/22/11 19:53	
1,1-Dichloropropene	<1.00	20	19.7	99	20.5	103	64-135	4	20	ug/L	05/22/11 19:53	
cis-1,3-Dichloropropene	<1.00	20	20.3	102	20.7	104	70-130	2	20	ug/L	05/22/11 19:53	
trans-1,3-dichloropropene	<0.500	20	21.9	110	22.2	111	70-130	1	20	ug/L	05/22/11 19:53	
Ethylbenzene	<2.00	20	18.9	95	19.9	100	70-130	5	20	ug/L	05/22/11 19:53	
Hexachlorobutadiene	<5.00	20	19.1	96	20.6	103	54-145	8	22	ug/L	05/22/11 19:53	
2-Hexanone	<5.00	40	39.4	99	38.7	97	65-129	2	20	ug/L	05/22/11 19:53	
Isopropylbenzene	<2.50	20	21.6	108	22.8	114	70-130	5	20	ug/L	05/22/11 19:53	
Methylene Chloride	<3.00	20	18.3	92	18.6	93	61-127	2	20	ug/L	05/22/11 19:53	
Iodomethane (Methyl Iodide)	<2.00	20	20.3	102	22.0	110	68-128	8	22	ug/L	05/22/11 19:53	
4-Methyl-2-Pentanone	<5.00	40	41.1	103	41.0	103	67-131	0	21	ug/L	05/22/11 19:53	



QC Summary **416904**

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

MB Sample Id: 603413-1-BLK

Matrix: Water

LCS Sample Id: 603413-1-BKS

Prep Method: SW5030C

Date Prep: 05/22/2011

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	19.4	97	19.5	98	70-130	1	21	ug/L	05/22/11 19:53	
Naphthalene	<5.00	20	19.8	99	22.3	112	64-133	12	27	ug/L	05/22/11 19:53	
n-Propylbenzene	<2.00	20	19.0	95	20.3	102	65-128	7	20	ug/L	05/22/11 19:53	
Styrene	<1.00	20	20.4	102	21.6	108	70-130	6	20	ug/L	05/22/11 19:53	
1,1,1,2-Tetrachloroethane	<0.500	20	20.1	101	21.0	105	70-130	4	20	ug/L	05/22/11 19:53	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.7	104	70-130	3	20	ug/L	05/22/11 19:53	
Tetrachloroethylene	<0.500	20	19.4	97	20.7	104	63-127	6	20	ug/L	05/22/11 19:53	
Toluene	<2.00	20	18.3	92	19.6	98	70-130	7	20	ug/L	05/22/11 19:53	
1,2,3-Trichlorobenzene	<5.00	20	19.1	96	21.1	106	66-131	10	27	ug/L	05/22/11 19:53	
1,2,4-Trichlorobenzene	<5.00	20	19.7	99	20.6	103	69-127	4	20	ug/L	05/22/11 19:53	
1,1,1-Trichloroethane	<0.500	20	20.3	102	20.8	104	62-133	2	20	ug/L	05/22/11 19:53	
1,1,2-Trichloroethane	<0.500	20	19.6	98	19.7	99	70-130	1	20	ug/L	05/22/11 19:53	
Trichloroethene	<0.500	20	19.3	97	20.1	101	70-130	4	20	ug/L	05/22/11 19:53	
Trichlorofluoromethane	<2.00	20	21.1	106	22.1	111	45-151	5	22	ug/L	05/22/11 19:53	
1,2,3-Trichloropropane	<1.00	20	20.0	100	20.5	103	70-130	2	20	ug/L	05/22/11 19:53	
1,2,4-Trimethylbenzene	<2.00	20	19.0	95	20.4	102	70-130	7	20	ug/L	05/22/11 19:53	
1,3,5-Trimethylbenzene	<1.50	20	18.8	94	20.0	100	70-130	6	20	ug/L	05/22/11 19:53	
o-Xylene	<1.00	20	19.5	98	20.5	103	70-130	5	20	ug/L	05/22/11 19:53	
m,p-Xylenes	<2.00	40	39.8	100	41.6	104	70-130	4	20	ug/L	05/22/11 19:53	
Vinyl Acetate	<5.00	20	20.6	103	20.2	101	52-142	2	22	ug/L	05/22/11 19:53	
Vinyl Chloride	<0.500	20	18.7	94	18.6	93	43-120	1	25	ug/L	05/22/11 19:53	



City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<2000	4000	2380	60	2370	59	35-160	0	20	ug/L	05/22/11 21:01	
Benzene	699	2000	2580	94	2680	99	69-130	4	20	ug/L	05/22/11 21:01	
Bromobenzene	<150	2000	1860	93	1930	97	70-130	4	20	ug/L	05/22/11 21:01	
Bromochloromethane	<50.0	2000	1980	99	2040	102	63-119	3	22	ug/L	05/22/11 21:01	
Bromodichloromethane	<50.0	2000	2120	106	2160	108	70-130	2	20	ug/L	05/22/11 21:01	
Bromoform	<100	2000	2110	106	2160	108	57-121	2	20	ug/L	05/22/11 21:01	
Bromomethane	<500	2000	2140	107	2280	114	53-141	6	22	ug/L	05/22/11 21:01	
2-Butanone	<500	4000	3520	88	3360	84	46-136	5	22	ug/L	05/22/11 21:01	
n-Butylbenzene	<250	2000	1920	96	1980	99	65-127	3	20	ug/L	05/22/11 21:01	
Sec-Butylbenzene	<150	2000	1890	95	1980	99	70-130	5	20	ug/L	05/22/11 21:01	
tert-Butylbenzene	<250	2000	1900	95	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Carbon Disulfide	<50.0	2000	2120	106	2220	111	58-145	5	28	ug/L	05/22/11 21:01	
Carbon Tetrachloride	<50.0	2000	2020	101	2160	108	60-152	7	20	ug/L	05/22/11 21:01	
Chlorobenzene	<50.0	2000	1860	93	1960	98	70-130	5	20	ug/L	05/22/11 21:01	
Chloroethane	<400	2000	1720	86	1830	92	59-153	6	20	ug/L	05/22/11 21:01	
Chloroform	<50.0	2000	1880	94	1950	98	65-123	4	22	ug/L	05/22/11 21:01	
Chloromethane	<500	2000	1810	91	1830	92	47-148	1	22	ug/L	05/22/11 21:01	
2-Chlorotoluene	<150	2000	1880	94	1960	98	70-130	4	20	ug/L	05/22/11 21:01	
4-Chlorotoluene	<200	2000	1880	94	1990	100	70-130	6	20	ug/L	05/22/11 21:01	
4-Isopropyltoluene	<150	2000	1990	100	2100	105	70-130	5	20	ug/L	05/22/11 21:01	
Dibromochloromethane	<50.0	2000	2080	104	2140	107	70-130	3	20	ug/L	05/22/11 21:01	
1,2-Dibromo-3-Chloropropane	<200	2000	2060	103	2120	106	50-117	3	22	ug/L	05/22/11 21:01	
1,2-Dibromoethane	<50.0	2000	2010	101	2060	103	67-117	2	20	ug/L	05/22/11 21:01	
Dibromomethane	<50.0	2000	2030	102	2000	100	66-115	1	20	ug/L	05/22/11 21:01	
1,2-Dichlorobenzene	<150	2000	1980	99	2010	101	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichlorobenzene	<150	2000	1940	97	2020	101	70-130	4	20	ug/L	05/22/11 21:01	
1,4-Dichlorobenzene	<150	2000	1860	93	1950	98	70-130	5	20	ug/L	05/22/11 21:01	
Dichlorodifluoromethane	<200	2000	1530	77	1580	79	16-151	3	33	ug/L	05/22/11 21:01	
1,1-Dichloroethane	<50.0	2000	1970	99	2040	102	66-129	3	20	ug/L	05/22/11 21:01	
1,2-Dichloroethane	<50.0	2000	1930	97	1970	99	64-126	2	20	ug/L	05/22/11 21:01	
1,1-Dichloroethene	<50.0	2000	1970	99	2070	104	65-152	5	20	ug/L	05/22/11 21:01	
cis-1,2-Dichloroethene	<50.0	2000	1760	88	1830	92	66-126	4	20	ug/L	05/22/11 21:01	
trans-1,2-dichloroethene	<50.0	2000	1890	95	1950	98	66-135	3	20	ug/L	05/22/11 21:01	
1,2-Dichloropropane	<50.0	2000	1950	98	1980	99	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichloropropane	<100	2000	1990	100	2060	103	67-115	3	20	ug/L	05/22/11 21:01	
2,2-Dichloropropane	<50.0	2000	2020	101	2130	107	62-145	5	20	ug/L	05/22/11 21:01	
1,1-Dichloropropene	<100	2000	1920	96	2000	100	72-140	4	20	ug/L	05/22/11 21:01	
cis-1,3-Dichloropropene	<100	2000	2020	101	2090	105	67-122	3	20	ug/L	05/22/11 21:01	
trans-1,3-dichloropropene	<50.0	2000	2180	109	2200	110	70-130	1	20	ug/L	05/22/11 21:01	
Ethylbenzene	271	2000	2170	95	2240	98	70-130	3	20	ug/L	05/22/11 21:01	
Hexachlorobutadiene	<500	2000	1900	95	1950	98	68-143	3	20	ug/L	05/22/11 21:01	
2-Hexanone	<500	4000	3540	89	3470	87	52-122	2	33	ug/L	05/22/11 21:01	
Isopropylbenzene	<250	2000	2150	108	2270	114	70-130	5	20	ug/L	05/22/11 21:01	
Methylene Chloride	<300	2000	1750	88	1800	90	59-121	3	20	ug/L	05/22/11 21:01	
Iodomethane (Methyl Iodide)	<200	2000	2120	106	2210	111	66-127	4	20	ug/L	05/22/11 21:01	
4-Methyl-2-Pentanone	<500	4000	4020	101	4050	101	53-125	1	20	ug/L	05/22/11 21:01	



QC Summary **416904**

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<200	2000	1970	99	2020	101	65-127	3	20	ug/L	05/22/11 21:01	
Naphthalene	<500	2000	2270	114	2350	118	54-129	3	26	ug/L	05/22/11 21:01	
n-Propylbenzene	<200	2000	1960	98	2040	102	69-126	4	20	ug/L	05/22/11 21:01	
Styrene	<100	2000	2110	106	2210	111	49-142	5	37	ug/L	05/22/11 21:01	
1,1,1,2-Tetrachloroethane	<50.0	2000	2030	102	2100	105	70-130	3	20	ug/L	05/22/11 21:01	
1,1,2,2-Tetrachloroethane	<50.0	2000	2090	105	2080	104	64-122	0	20	ug/L	05/22/11 21:01	
Tetrachloroethylene	<50.0	2000	1940	97	2010	101	69-130	4	20	ug/L	05/22/11 21:01	
Toluene	1090	2000	3010	96	3150	103	70-130	5	20	ug/L	05/22/11 21:01	
1,2,3-Trichlorobenzene	<500	2000	1990	100	2070	104	61-126	4	24	ug/L	05/22/11 21:01	
1,2,4-Trichlorobenzene	<500	2000	1950	98	2090	105	64-123	7	20	ug/L	05/22/11 21:01	
1,1,1-Trichloroethane	<50.0	2000	1930	97	2030	102	68-136	5	20	ug/L	05/22/11 21:01	
1,1,2-Trichloroethane	<50.0	2000	1930	97	1930	97	65-112	0	20	ug/L	05/22/11 21:01	
Trichloroethene	<50.0	2000	1910	96	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Trichlorofluoromethane	<200	2000	2030	102	2110	106	53-171	4	20	ug/L	05/22/11 21:01	
1,2,3-Trichloropropane	<100	2000	2040	102	2050	103	58-116	0	20	ug/L	05/22/11 21:01	
1,2,4-Trimethylbenzene	455	2000	2410	98	2480	101	67-128	3	22	ug/L	05/22/11 21:01	
1,3,5-Trimethylbenzene	<150	2000	2070	104	2130	107	70-130	3	20	ug/L	05/22/11 21:01	
o-Xylene	646	2000	2620	99	2730	104	70-130	4	20	ug/L	05/22/11 21:01	
m,p-Xylenes	1330	4000	5270	99	5610	107	70-130	6	20	ug/L	05/22/11 21:01	
Vinyl Acetate	<500	2000	1960	98	2010	101	43-133	3	23	ug/L	05/22/11 21:01	
Vinyl Chloride	<50.0	2000	1790	90	1830	92	46-132	2	21	ug/L	05/22/11 21:01	



City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.4	76	34.3	86	55-165	12	28	ug/L	05/21/11 19:09	
Benzene	<0.500	20	21.1	106	21.7	109	70-130	3	20	ug/L	05/21/11 19:09	
Bromobenzene	<1.50	20	17.4	87	18.3	92	70-130	5	20	ug/L	05/21/11 19:09	
Bromochloromethane	<0.500	20	22.9	115	23.4	117	67-125	2	24	ug/L	05/21/11 19:09	
Bromodichloromethane	<0.500	20	22.8	114	23.1	116	70-130	1	20	ug/L	05/21/11 19:09	
Bromoform	<1.00	20	20.8	104	20.9	105	69-130	0	20	ug/L	05/21/11 19:09	
Bromomethane	<5.00	20	26.1	131	26.4	132	58-138	1	25	ug/L	05/21/11 19:09	
2-Butanone	<5.00	40	40.9	102	42.1	105	58-146	3	27	ug/L	05/21/11 19:09	
n-Butylbenzene	<2.50	20	17.6	88	18.7	94	58-128	6	20	ug/L	05/21/11 19:09	
Sec-Butylbenzene	<1.50	20	17.7	89	18.8	94	61-133	6	20	ug/L	05/21/11 19:09	
tert-Butylbenzene	<2.50	20	18.5	93	19.2	96	65-128	4	20	ug/L	05/21/11 19:09	
Carbon Disulfide	<0.500	20	25.0	125	25.9	130	59-138	4	22	ug/L	05/21/11 19:09	
Carbon Tetrachloride	<0.500	20	22.2	111	23.0	115	57-140	4	21	ug/L	05/21/11 19:09	
Chlorobenzene	<0.500	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
Chloroethane	<4.00	20	20.0	100	21.5	108	60-146	7	24	ug/L	05/21/11 19:09	
Chloroform	<0.500	20	21.5	108	22.5	113	66-128	5	24	ug/L	05/21/11 19:09	
Chloromethane	<5.00	20	20.5	103	21.1	106	47-144	3	26	ug/L	05/21/11 19:09	
2-Chlorotoluene	<1.50	20	17.2	86	18.3	92	70-130	6	20	ug/L	05/21/11 19:09	
4-Chlorotoluene	<2.00	20	17.6	88	18.6	93	70-130	6	28	ug/L	05/21/11 19:09	
4-Isopropyltoluene	<1.50	20	18.6	93	19.7	99	67-135	6	20	ug/L	05/21/11 19:09	
Dibromochloromethane	<0.500	20	20.9	105	20.8	104	70-130	0	20	ug/L	05/21/11 19:09	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.1	101	20.6	103	60-128	2	21	ug/L	05/21/11 19:09	
1,2-Dibromoethane	<0.500	20	20.0	100	20.1	101	70-130	0	20	ug/L	05/21/11 19:09	
Dibromomethane	<0.500	20	21.7	109	22.0	110	70-130	1	23	ug/L	05/21/11 19:09	
1,2-Dichlorobenzene	<1.50	20	18.3	92	19.0	95	70-130	4	20	ug/L	05/21/11 19:09	
1,3-Dichlorobenzene	<1.50	20	18.3	92	19.4	97	70-130	6	20	ug/L	05/21/11 19:09	
1,4-Dichlorobenzene	<1.50	20	17.2	86	18.1	91	70-130	5	20	ug/L	05/21/11 19:09	
Dichlorodifluoromethane	<2.00	20	19.9	100	20.7	104	9-134	4	27	ug/L	05/21/11 19:09	
1,1-Dichloroethane	<0.500	20	22.7	114	23.3	117	66-132	3	20	ug/L	05/21/11 19:09	
1,2-Dichloroethane	<0.500	20	22.4	112	22.7	114	70-130	1	20	ug/L	05/21/11 19:09	
1,1-Dichloroethene	<0.500	20	22.8	114	23.9	120	58-144	5	21	ug/L	05/21/11 19:09	
cis-1,2-Dichloroethene	<0.500	20	20.1	101	21.4	107	67-129	6	24	ug/L	05/21/11 19:09	
trans-1,2-dichloroethene	<0.500	20	21.6	108	22.6	113	63-137	5	21	ug/L	05/21/11 19:09	
1,2-Dichloropropane	<0.500	20	20.9	105	21.5	108	70-130	3	20	ug/L	05/21/11 19:09	
1,3-Dichloropropane	<1.00	20	20.0	100	20.3	102	70-130	1	20	ug/L	05/21/11 19:09	
2,2-Dichloropropane	<0.500	20	23.5	118	24.2	121	60-141	3	24	ug/L	05/21/11 19:09	
1,1-Dichloropropene	<1.00	20	20.9	105	22.2	111	64-135	6	20	ug/L	05/21/11 19:09	
cis-1,3-Dichloropropene	<1.00	20	22.1	111	22.5	113	70-130	2	20	ug/L	05/21/11 19:09	
trans-1,3-dichloropropene	<0.500	20	21.4	107	21.9	110	70-130	2	20	ug/L	05/21/11 19:09	
Ethylbenzene	<2.00	20	18.9	95	19.6	98	70-130	4	20	ug/L	05/21/11 19:09	
Hexachlorobutadiene	<5.00	20	17.8	89	18.6	93	54-145	4	22	ug/L	05/21/11 19:09	
2-Hexanone	<5.00	40	35.4	89	35.6	89	65-129	1	20	ug/L	05/21/11 19:09	
Isopropylbenzene	<2.50	20	21.2	106	22.0	110	70-130	4	20	ug/L	05/21/11 19:09	
Methylene Chloride	<3.00	20	20.2	101	21.1	106	61-127	4	20	ug/L	05/21/11 19:09	
Iodomethane (Methyl Iodide)	<2.00	20	23.8	119	25.6	128	68-128	7	22	ug/L	05/21/11 19:09	
4-Methyl-2-Pentanone	<5.00	40	44.2	111	43.3	108	67-131	2	21	ug/L	05/21/11 19:09	



QC Summary **416904**

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	22.2	111	22.6	113	70-130	2	21	ug/L	05/21/11 19:09	
Naphthalene	<5.00	20	19.9	100	20.6	103	64-133	3	27	ug/L	05/21/11 19:09	
n-Propylbenzene	<2.00	20	17.8	89	18.8	94	65-128	5	20	ug/L	05/21/11 19:09	
Styrene	<1.00	20	20.6	103	21.2	106	70-130	3	20	ug/L	05/21/11 19:09	
1,1,1,2-Tetrachloroethane	<0.500	20	20.2	101	20.8	104	70-130	3	20	ug/L	05/21/11 19:09	
1,1,2,2-Tetrachloroethane	<0.500	20	19.8	99	19.9	100	70-130	1	20	ug/L	05/21/11 19:09	
Tetrachloroethylene	<0.500	20	19.8	99	20.5	103	63-127	3	20	ug/L	05/21/11 19:09	
Toluene	<2.00	20	18.7	94	19.1	96	70-130	2	20	ug/L	05/21/11 19:09	
1,2,3-Trichlorobenzene	<5.00	20	18.7	94	19.8	99	66-131	6	27	ug/L	05/21/11 19:09	
1,2,4-Trichlorobenzene	<5.00	20	18.8	94	20.1	101	69-127	7	20	ug/L	05/21/11 19:09	
1,1,1-Trichloroethane	<0.500	20	22.4	112	23.3	117	62-133	4	20	ug/L	05/21/11 19:09	
1,1,2-Trichloroethane	<0.500	20	18.9	95	19.4	97	70-130	3	20	ug/L	05/21/11 19:09	
Trichloroethene	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/21/11 19:09	
Trichlorofluoromethane	<2.00	20	23.6	118	24.4	122	45-151	3	22	ug/L	05/21/11 19:09	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.8	99	70-130	1	20	ug/L	05/21/11 19:09	
1,2,4-Trimethylbenzene	<2.00	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
1,3,5-Trimethylbenzene	<1.50	20	17.6	88	18.7	94	70-130	6	20	ug/L	05/21/11 19:09	
o-Xylene	<1.00	20	19.4	97	19.8	99	70-130	2	20	ug/L	05/21/11 19:09	
m,p-Xylenes	<2.00	40	39.2	98	40.4	101	70-130	3	20	ug/L	05/21/11 19:09	
Vinyl Acetate	<5.00	20	20.0	100	20.1	101	52-142	0	22	ug/L	05/21/11 19:09	
Vinyl Chloride	<0.500	20	20.9	105	22.1	111	43-120	6	25	ug/L	05/21/11 19:09	



City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.9	77	28.6	72	35-160	8	20	ug/L	05/21/11 23:19	
Benzene	<0.500	20	20.0	100	19.9	100	69-130	1	20	ug/L	05/21/11 23:19	
Bromobenzene	<1.50	20	16.3	82	16.4	82	70-130	1	20	ug/L	05/21/11 23:19	
Bromochloromethane	<0.500	20	20.6	103	21.3	107	63-119	3	22	ug/L	05/21/11 23:19	
Bromodichloromethane	<0.500	20	21.6	108	21.6	108	70-130	0	20	ug/L	05/21/11 23:19	
Bromoform	<1.00	20	18.9	95	19.4	97	57-121	3	20	ug/L	05/21/11 23:19	
Bromomethane	<5.00	20	24.6	123	24.1	121	53-141	2	22	ug/L	05/21/11 23:19	
2-Butanone	<5.00	40	43.3	108	42.5	106	46-136	2	22	ug/L	05/21/11 23:19	
n-Butylbenzene	<2.50	20	16.8	84	16.9	85	65-127	1	20	ug/L	05/21/11 23:19	
Sec-Butylbenzene	<1.50	20	17.6	88	17.6	88	70-130	0	20	ug/L	05/21/11 23:19	
tert-Butylbenzene	<2.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Carbon Disulfide	<0.500	20	23.8	119	24.8	124	58-145	4	28	ug/L	05/21/11 23:19	
Carbon Tetrachloride	<0.500	20	22.0	110	21.7	109	60-152	1	20	ug/L	05/21/11 23:19	
Chlorobenzene	<0.500	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
Chloroethane	<4.00	20	19.5	98	19.7	99	59-153	1	20	ug/L	05/21/11 23:19	
Chloroform	<0.500	20	21.1	106	21.1	106	65-123	0	22	ug/L	05/21/11 23:19	
Chloromethane	<5.00	20	21.9	110	21.7	109	47-148	1	22	ug/L	05/21/11 23:19	
2-Chlorotoluene	<1.50	20	16.8	84	16.5	83	70-130	2	20	ug/L	05/21/11 23:19	
4-Chlorotoluene	<2.00	20	16.9	85	16.8	84	70-130	1	20	ug/L	05/21/11 23:19	
4-Isopropyltoluene	<1.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Dibromochloromethane	<0.500	20	19.3	97	19.1	96	70-130	1	20	ug/L	05/21/11 23:19	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.6	103	50-117	3	22	ug/L	05/21/11 23:19	
1,2-Dibromoethane	<0.500	20	18.9	95	18.8	94	67-117	1	20	ug/L	05/21/11 23:19	
Dibromomethane	<0.500	20	21.0	105	20.7	104	66-115	1	20	ug/L	05/21/11 23:19	
1,2-Dichlorobenzene	<1.50	20	17.4	87	17.4	87	70-130	0	20	ug/L	05/21/11 23:19	
1,3-Dichlorobenzene	<1.50	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
1,4-Dichlorobenzene	<1.50	20	16.5	83	16.2	81	70-130	2	20	ug/L	05/21/11 23:19	
Dichlorodifluoromethane	<2.00	20	18.9	95	19.8	99	16-151	5	33	ug/L	05/21/11 23:19	
1,1-Dichloroethane	<0.500	20	21.7	109	22.0	110	66-129	1	20	ug/L	05/21/11 23:19	
1,2-Dichloroethane	<0.500	20	21.4	107	21.6	108	64-126	1	20	ug/L	05/21/11 23:19	
1,1-Dichloroethene	<0.500	20	22.7	114	23.1	116	65-152	2	20	ug/L	05/21/11 23:19	
cis-1,2-Dichloroethene	<0.500	20	19.3	97	19.6	98	66-126	2	20	ug/L	05/21/11 23:19	
trans-1,2-dichloroethene	<0.500	20	21.4	107	21.5	108	66-135	0	20	ug/L	05/21/11 23:19	
1,2-Dichloropropane	<0.500	20	20.2	101	19.8	99	70-130	2	20	ug/L	05/21/11 23:19	
1,3-Dichloropropane	<1.00	20	19.1	96	18.7	94	67-115	2	20	ug/L	05/21/11 23:19	
2,2-Dichloropropane	<0.500	20	21.2	106	21.4	107	62-145	1	20	ug/L	05/21/11 23:19	
1,1-Dichloropropene	<1.00	20	20.2	101	20.3	102	72-140	0	20	ug/L	05/21/11 23:19	
cis-1,3-Dichloropropene	<1.00	20	20.1	101	20.4	102	67-122	1	20	ug/L	05/21/11 23:19	
trans-1,3-dichloropropene	<0.500	20	20.1	101	20.0	100	70-130	0	20	ug/L	05/21/11 23:19	
Ethylbenzene	<2.00	20	17.7	89	17.7	89	70-130	0	20	ug/L	05/21/11 23:19	
Hexachlorobutadiene	<5.00	20	16.0	80	16.7	84	68-143	4	20	ug/L	05/21/11 23:19	
2-Hexanone	<5.00	40	43.1	108	42.2	106	52-122	2	33	ug/L	05/21/11 23:19	
Isopropylbenzene	<2.50	20	20.2	101	20.3	102	70-130	0	20	ug/L	05/21/11 23:19	
Methylene Chloride	<3.00	20	18.8	94	19.6	98	59-121	4	20	ug/L	05/21/11 23:19	
Iodomethane (Methyl Iodide)	<2.00	20	21.3	107	22.9	115	66-127	7	20	ug/L	05/21/11 23:19	
4-Methyl-2-Pentanone	<5.00	40	53.0	133	51.7	129	53-125	2	20	ug/L	05/21/11 23:19	M1



QC Summary **416904**

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	21.3	107	21.5	108	65-127	1	20	ug/L	05/21/11 23:19	
Naphthalene	<5.00	20	19.4	97	20.6	103	54-129	6	26	ug/L	05/21/11 23:19	
n-Propylbenzene	<2.00	20	17.7	89	17.4	87	69-126	2	20	ug/L	05/21/11 23:19	
Styrene	<1.00	20	5.07	25	5.20	26	49-142	3	37	ug/L	05/21/11 23:19	M2
1,1,1,2-Tetrachloroethane	<0.500	20	19.0	95	18.3	92	70-130	4	20	ug/L	05/21/11 23:19	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.2	101	64-122	0	20	ug/L	05/21/11 23:19	
Tetrachloroethylene	<0.500	20	17.5	88	17.9	90	69-130	2	20	ug/L	05/21/11 23:19	
Toluene	<2.00	20	17.5	88	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
1,2,3-Trichlorobenzene	<5.00	20	16.9	85	17.8	89	61-126	5	24	ug/L	05/21/11 23:19	
1,2,4-Trichlorobenzene	<5.00	20	17.0	85	17.3	87	64-123	2	20	ug/L	05/21/11 23:19	
1,1,1-Trichloroethane	<0.500	20	22.1	111	22.5	113	68-136	2	20	ug/L	05/21/11 23:19	
1,1,2-Trichloroethane	<0.500	20	18.2	91	17.7	89	65-112	3	20	ug/L	05/21/11 23:19	
Trichloroethene	<0.500	20	20.1	101	19.9	100	70-130	1	20	ug/L	05/21/11 23:19	
Trichlorofluoromethane	<2.00	20	22.9	115	23.8	119	53-171	4	20	ug/L	05/21/11 23:19	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.7	99	58-116	0	20	ug/L	05/21/11 23:19	
1,2,4-Trimethylbenzene	<2.00	20	17.4	87	17.1	86	67-128	2	22	ug/L	05/21/11 23:19	
1,3,5-Trimethylbenzene	<1.50	20	17.2	86	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
o-Xylene	<1.00	20	18.1	91	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
m,p-Xylenes	<2.00	40	37.2	93	36.4	91	70-130	2	20	ug/L	05/21/11 23:19	
Vinyl Acetate	<5.00	20	11.4	57	11.9	60	43-133	4	23	ug/L	05/21/11 23:19	
Vinyl Chloride	<0.500	20	21.7	109	21.2	106	46-132	2	21	ug/L	05/21/11 23:19	



City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

MB Sample Id: 603743-1-BLK

Matrix: Solid

LCS Sample Id: 603743-1-BKS

Prep Method: SW5035A

Date Prep: 05/17/2011

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.50	2	2.27	114	2.24	112	52-140	1	23	mg/kg	05/24/11 21:05	
Benzene	<0.0500	1	0.937	94	0.942	94	70-130	1	20	mg/kg	05/24/11 21:05	
Bromobenzene	<0.250	1	0.989	99	1.00	100	70-130	1	20	mg/kg	05/24/11 21:05	
Bromochloromethane	<0.0500	1	0.988	99	0.988	99	70-130	0	20	mg/kg	05/24/11 21:05	
Bromodichloromethane	<0.0500	1	1.18	118	1.16	116	70-130	2	20	mg/kg	05/24/11 21:05	
Bromoform	<0.100	1	1.06	106	1.02	102	64-120	4	20	mg/kg	05/24/11 21:05	
Bromomethane	<0.500	1	1.37	137	1.45	145	21-168	6	56	mg/kg	05/24/11 21:05	
2-Butanone	<0.500	2	1.71	86	1.79	90	70-133	5	23	mg/kg	05/24/11 21:05	
tert-Butylbenzene	<0.250	1	1.09	109	1.09	109	70-130	0	20	mg/kg	05/24/11 21:05	
Sec-Butylbenzene	<0.250	1	1.06	106	1.05	105	70-130	1	20	mg/kg	05/24/11 21:05	
n-Butylbenzene	<0.250	1	1.01	101	1.06	106	70-130	5	20	mg/kg	05/24/11 21:05	
Carbon Disulfide	<0.500	1	0.853	85	0.851	85	43-164	0	38	mg/kg	05/24/11 21:05	
Carbon Tetrachloride	<0.0500	1	1.23	123	1.18	118	70-130	4	20	mg/kg	05/24/11 21:05	
Chlorobenzene	<0.0500	1	1.01	101	0.994	99	70-130	2	20	mg/kg	05/24/11 21:05	
Chloroethane	<0.500	1	0.945	95	1.02	102	35-156	8	48	mg/kg	05/24/11 21:05	
Chloroform	<0.0500	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
Chloromethane	<0.500	1	0.609	61	0.601	60	36-153	1	41	mg/kg	05/24/11 21:05	
2-Chlorotoluene	<0.250	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
4-Chlorotoluene	<0.250	1	1.11	111	1.14	114	70-130	3	20	mg/kg	05/24/11 21:05	
p-Cymene (p-Isopropyltoluene)	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,2-Dibromo-3-Chloropropane	<0.500	1	0.902	90	0.951	95	64-114	5	20	mg/kg	05/24/11 21:05	
Dibromochloromethane	<0.0500	1	1.07	107	1.06	106	70-130	1	20	mg/kg	05/24/11 21:05	
1,2-Dibromoethane	<0.500	1	0.998	100	0.976	98	70-130	2	20	mg/kg	05/24/11 21:05	
Dibromomethane	<0.250	1	1.02	102	1.06	106	70-130	4	20	mg/kg	05/24/11 21:05	
1,2-Dichlorobenzene	<0.0500	1	0.981	98	1.04	104	70-130	6	20	mg/kg	05/24/11 21:05	
1,3-Dichlorobenzene	<0.0500	1	1.02	102	1.01	101	70-130	1	20	mg/kg	05/24/11 21:05	
1,4-Dichlorobenzene	<0.0500	1	1.00	100	1.08	108	70-130	8	20	mg/kg	05/24/11 21:05	
Dichlorodifluoromethane	<0.500	1	0.489	49	0.458	46	12-169	7	49	mg/kg	05/24/11 21:05	
1,2-Dichloroethane	<0.0500	1	1.20	120	1.22	122	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethane	<0.0500	1	1.09	109	1.11	111	70-130	2	20	mg/kg	05/24/11 21:05	
trans-1,2-dichloroethene	<0.0500	1	1.02	102	0.981	98	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,2-Dichloroethene	<0.0500	1	0.962	96	0.970	97	70-130	1	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethene	<0.100	1	1.04	104	1.04	104	59-126	0	21	mg/kg	05/24/11 21:05	
2,2-Dichloropropane	<0.250	1	1.33	133	1.30	130	64-123	2	20	mg/kg	05/24/11 21:05	L1
1,3-Dichloropropane	<0.250	1	1.06	106	1.04	104	70-130	2	20	mg/kg	05/24/11 21:05	
1,2-Dichloropropane	<0.0500	1	0.976	98	0.972	97	70-130	0	20	mg/kg	05/24/11 21:05	
trans-1,3-dichloropropene	<0.0500	1	1.20	120	1.18	118	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloropropene	<0.250	1	1.04	104	1.00	100	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,3-Dichloropropene	<0.0500	1	1.07	107	1.05	105	70-130	2	20	mg/kg	05/24/11 21:05	
Ethylbenzene	<0.100	1	1.08	108	1.05	105	70-130	3	20	mg/kg	05/24/11 21:05	
Hexachlorobutadiene	<0.500	1	1.21	121	1.24	124	70-130	2	20	mg/kg	05/24/11 21:05	
2-Hexanone	<0.500	2	1.87	94	1.95	98	70-130	4	20	mg/kg	05/24/11 21:05	
Iodomethane (Methyl Iodide)	<0.500	1	0.963	96	1.00	100	53-157	4	31	mg/kg	05/24/11 21:05	
Isopropylbenzene	<0.250	1	1.12	112	1.12	112	70-130	0	20	mg/kg	05/24/11 21:05	
Naphthalene	<0.250	1	0.935	94	1.01	101	70-130	8	20	mg/kg	05/24/11 21:05	
Methylene Chloride	<0.500	1	0.901	90	0.917	92	70-130	2	20	mg/kg	05/24/11 21:05	



QC Summary **416904**

City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

MB Sample Id: 603743-1-BLK

Matrix: Solid

LCS Sample Id: 603743-1-BKS

Prep Method: SW5035A

Date Prep: 05/17/2011

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.500	2	1.97	99	2.00	100	70-130	2	20	mg/kg	05/24/11 21:05	
MTBE	<0.250	1	1.05	105	1.04	104	70-130	1	20	mg/kg	05/24/11 21:05	
n-Propylbenzene	<0.250	1	1.07	107	1.09	109	70-130	2	20	mg/kg	05/24/11 21:05	
Styrene	<0.250	1	1.04	104	1.01	101	70-130	3	20	mg/kg	05/24/11 21:05	
1,1,1,2-Tetrachloroethane	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,1,2,2-Tetrachloroethane	<0.100	1	0.922	92	0.923	92	70-130	0	20	mg/kg	05/24/11 21:05	
Tetrachloroethylene	<0.0500	1	1.01	101	0.972	97	70-130	4	20	mg/kg	05/24/11 21:05	
Toluene	<0.100	1	0.942	94	0.921	92	70-130	2	20	mg/kg	05/24/11 21:05	
1,2,4-Trichlorobenzene	<0.250	1	1.06	106	1.11	111	70-130	5	20	mg/kg	05/24/11 21:05	
1,2,3-Trichlorobenzene	<0.250	1	1.03	103	1.09	109	70-130	6	20	mg/kg	05/24/11 21:05	
1,1,2-Trichloroethane	<0.0500	1	0.961	96	0.952	95	70-130	1	20	mg/kg	05/24/11 21:05	
1,1,1-Trichloroethane	<0.0500	1	1.18	118	1.18	118	70-130	0	20	mg/kg	05/24/11 21:05	
Trichloroethene	<0.0500	1	1.01	101	1.05	105	70-130	4	20	mg/kg	05/24/11 21:05	
Trichlorofluoromethane	<0.500	1	1.10	110	1.10	110	54-136	0	34	mg/kg	05/24/11 21:05	V1
1,2,3-Trichloropropane	<0.250	1	1.07	107	1.08	108	70-130	1	20	mg/kg	05/24/11 21:05	
1,2,4-Trimethylbenzene	<0.250	1	1.09	109	1.12	112	70-130	3	20	mg/kg	05/24/11 21:05	
1,3,5-Trimethylbenzene	<0.250	1	1.10	110	1.12	112	70-130	2	20	mg/kg	05/24/11 21:05	
Vinyl Acetate	<0.500	1	0.904	90	0.913	91	22-183	1	20	mg/kg	05/24/11 21:05	
Vinyl Chloride	<0.500	1	0.846	85	0.814	81	38-154	4	20	mg/kg	05/24/11 21:05	
o-Xylene	<0.0500	1	1.02	102	0.989	99	70-130	3	20	mg/kg	05/24/11 21:05	
m,p-Xylenes	<0.100	2	2.00	100	1.98	99	70-130	1	20	mg/kg	05/24/11 21:05	

City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Matrix: Soil

Prep Method: SW5035A

Date Prep: 05/19/2011

Parent Sample Id: 417239-003

MS Sample Id: 417239-003 S

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.60	2.13	<1.60	0	<1.52	0	49-140	NC	35	mg/kg	05/25/11 21:23	M2
Benzene	2.35	1.07	3.87	142	4.01	163	63-115	4	22	mg/kg	05/25/11 21:23	M1
Bromobenzene	<0.267	1.07	0.861	80	0.790	77	57-123	9	25	mg/kg	05/25/11 21:23	
Bromochloromethane	<0.0533	1.07	0.882	82	0.815	80	52-126	8	32	mg/kg	05/25/11 21:23	
Bromodichloromethane	<0.0533	1.07	1.05	98	1.01	99	57-120	4	22	mg/kg	05/25/11 21:23	
Bromoform	<0.107	1.07	0.861	80	0.729	71	53-120	17	24	mg/kg	05/25/11 21:23	
Bromomethane	<0.533	2.13	2.82	132	3.54	174	25-190	23	54	mg/kg	05/25/11 21:23	
2-Butanone	<0.533	2.13	0.902	42	0.754	37	57-137	18	44	mg/kg	05/25/11 21:23	M2
tert-Butylbenzene	<0.267	1.07	3.59	336	4.24	416	49-133	17	28	mg/kg	05/25/11 21:23	M1
Sec-Butylbenzene	0.529	1.07	1.60	100	1.76	121	47-137	10	29	mg/kg	05/25/11 21:23	
n-Butylbenzene	1.34	1.07	2.52	110	3.02	165	35-134	18	30	mg/kg	05/25/11 21:23	M1
Carbon Disulfide	<0.533	2.13	0.795	37	0.721	36	26-156	10	40	mg/kg	05/25/11 21:23	
Carbon Tetrachloride	<0.0533	1.07	0.967	90	0.905	89	47-127	7	26	mg/kg	05/25/11 21:23	
Chlorobenzene	<0.0533	1.07	0.852	80	0.786	77	63-116	8	22	mg/kg	05/25/11 21:23	
Chloroethane	<0.533	2.13	0.835	39	0.743	37	32-145	12	51	mg/kg	05/25/11 21:23	
Chloroform	<0.0533	1.07	1.04	97	0.899	88	51-124	15	34	mg/kg	05/25/11 21:23	
Chloromethane	<0.533	2.13	<0.533	0	<0.508	0	28-142	NC	48	mg/kg	05/25/11 21:23	M2
2-Chlorotoluene	<0.267	1.07	1.45	136	1.32	129	62-119	9	26	mg/kg	05/25/11 21:23	M1
4-Chlorotoluene	<0.267	1.07	1.01	94	0.930	91	65-116	8	24	mg/kg	05/25/11 21:23	
p-Cymene (p-Isopropyltoluene)	<0.267	1.07	1.20	112	1.28	125	44-138	6	28	mg/kg	05/25/11 21:23	
1,2-Dibromo-3-Chloropropane	<0.533	1.07	0.830	78	0.663	65	55-116	22	25	mg/kg	05/25/11 21:23	
Dibromochloromethane	<0.0533	1.07	0.881	82	0.797	78	56-121	10	24	mg/kg	05/25/11 21:23	
1,2-Dibromoethane	<0.533	1.07	0.783	73	0.698	68	58-115	11	22	mg/kg	05/25/11 21:23	
Dibromomethane	<0.267	1.07	0.849	79	0.789	77	59-117	7	23	mg/kg	05/25/11 21:23	
1,2-Dichlorobenzene	<0.0533	1.07	0.898	84	0.814	80	62-117	10	23	mg/kg	05/25/11 21:23	
1,3-Dichlorobenzene	<0.0533	1.07	0.889	83	0.854	84	61-118	4	24	mg/kg	05/25/11 21:23	
1,4-Dichlorobenzene	<0.0533	1.07	0.947	89	0.845	83	64-118	11	23	mg/kg	05/25/11 21:23	
Dichlorodifluoromethane	<0.533	2.13	<0.533	0	<0.508	0	25-143	NC	62	mg/kg	05/25/11 21:23	M2
1,2-Dichloroethane	0.0746	1.07	1.08	94	0.990	90	56-122	9	22	mg/kg	05/25/11 21:23	
1,1-Dichloroethane	<0.0533	1.07	0.973	91	0.818	80	50-126	17	36	mg/kg	05/25/11 21:23	
trans-1,2-dichloroethene	<0.0533	1.07	0.851	80	0.707	69	49-127	18	38	mg/kg	05/25/11 21:23	
cis-1,2-Dichloroethene	<0.0533	1.07	0.852	80	0.721	71	46-129	17	37	mg/kg	05/25/11 21:23	
1,1-Dichloroethene	<0.107	1.07	0.828	77	0.719	70	36-131	14	55	mg/kg	05/25/11 21:23	
2,2-Dichloropropane	<0.267	1.07	1.07	100	0.969	95	41-133	10	32	mg/kg	05/25/11 21:23	
1,3-Dichloropropane	<0.267	1.07	0.869	81	0.788	77	55-117	10	24	mg/kg	05/25/11 21:23	
1,2-Dichloropropane	<0.0533	1.07	0.832	78	0.825	81	64-112	1	21	mg/kg	05/25/11 21:23	
trans-1,3-dichloropropene	<0.0533	1.07	0.957	89	0.856	84	59-127	11	22	mg/kg	05/25/11 21:23	
1,1-Dichloropropene	<0.267	1.07	0.828	77	0.776	76	57-119	6	26	mg/kg	05/25/11 21:23	
cis-1,3-Dichloropropene	<0.0533	1.07	0.851	80	0.802	79	66-115	6	22	mg/kg	05/25/11 21:23	
Ethylbenzene	14.3	1.07	17.3	280	20.3	588	59-117	16	27	mg/kg	05/25/11 21:23	M3
Hexachlorobutadiene	<0.533	1.07	1.05	98	0.954	94	41-148	10	26	mg/kg	05/25/11 21:23	
2-Hexanone	<0.533	2.13	2.46	115	4.02	198	60-128	48	25	mg/kg	05/25/11 21:23	M1R2
Iodomethane (Methyl Iodide)	<0.533	2.13	0.842	40	0.721	36	41-151	15	57	mg/kg	05/25/11 21:23	M2
Isopropylbenzene	1.38	1.07	2.60	114	3.05	164	58-139	16	29	mg/kg	05/25/11 21:23	M1
Naphthalene	3.38	1.07	4.93	145	5.64	222	37-138	13	26	mg/kg	05/25/11 21:23	M3
Methylene Chloride	<0.533	1.07	0.813	76	0.776	76	48-123	5	37	mg/kg	05/25/11 21:23	



City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Parent Sample Id: 417239-003

Matrix: Soil

MS Sample Id: 417239-003 S

Prep Method: SW5035A

Date Prep: 05/19/2011

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.533	2.13	2.79	131	0.932	46	67-129	100	25	mg/kg	05/25/11 21:23	M1M2R
MTBE	2.93	2.13	4.39	69	3.84	45	62-125	13	24	mg/kg	05/25/11 21:23	M2
n-Propylbenzene	4.53	1.07	6.50	184	8.42	381	51-129	26	29	mg/kg	05/25/11 21:23	M3
Styrene	<0.267	1.07	1.22	114	1.26	124	57-123	3	23	mg/kg	05/25/11 21:23	M1
1,1,1,2-Tetrachloroethane	<0.267	1.07	0.869	81	0.772	76	59-115	12	23	mg/kg	05/25/11 21:23	
1,1,2,2-Tetrachloroethane	<0.107	1.07	0.866	81	0.670	66	45-133	26	29	mg/kg	05/25/11 21:23	
Tetrachloroethylene	<0.0533	1.07	0.835	78	0.751	74	40-125	11	26	mg/kg	05/25/11 21:23	
Toluene	5.74	1.07	7.72	185	8.84	304	50-125	14	28	mg/kg	05/25/11 21:23	M3
1,2,4-Trichlorobenzene	<0.267	1.07	0.916	86	0.823	81	31-136	11	27	mg/kg	05/25/11 21:23	
1,2,3-Trichlorobenzene	<0.267	1.07	0.880	82	0.774	76	29-135	13	33	mg/kg	05/25/11 21:23	
1,1,2-Trichloroethane	<0.0533	1.07	1.23	115	1.23	121	53-117	0	24	mg/kg	05/25/11 21:23	M1
1,1,1-Trichloroethane	<0.0533	1.07	0.985	92	0.888	87	47-125	10	31	mg/kg	05/25/11 21:23	
Trichloroethene	<0.0533	1.07	0.898	84	0.858	84	51-130	5	24	mg/kg	05/25/11 21:23	
Trichlorofluoromethane	<0.533	2.13	0.764	36	0.620	31	36-133	21	45	mg/kg	05/25/11 21:23	M2V1
1,2,3-Trichloropropane	<0.267	1.07	0.886	83	0.786	77	56-120	12	25	mg/kg	05/25/11 21:23	
1,2,4-Trimethylbenzene	17.9	1.07	22.1	393	27.2	912	49-129	21	38	mg/kg	05/25/11 21:23	M3
1,3,5-Trimethylbenzene	5.62	1.07	7.13	141	9.97	426	44-137	33	38	mg/kg	05/25/11 21:23	M3
Vinyl Acetate	<0.533	2.13	<0.533	0	<0.508	0	25-170	NC	50	mg/kg	05/25/11 21:23	M2
Vinyl Chloride	<0.533	2.13	0.567	27	<0.508	0	25-144	200	47	mg/kg	05/25/11 21:23	M2R2
o-Xylene	14.7	1.07	17.9	299	22.2	735	52-127	21	29	mg/kg	05/25/11 21:23	M3
m,p-Xylenes	16.8	2.13	21.1	202	25.7	438	51-126	20	29	mg/kg	05/25/11 21:23	M3



City of Tucson / Environmental Services, Tucson, AZ

Tucson Fire Department HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858061

MB Sample Id: 603702-1-BLK

Matrix: Solid

LCS Sample Id: 603702-1-BKS

Prep Method: SW3545

Date Prep: 05/25/2011

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.330	2	1.67	84	1.80	90	56-106	7	20	mg/kg	05/27/11 12:29	N1
Acenaphthylene	<0.330	2	1.78	89	1.88	94	60-97	5	20	mg/kg	05/27/11 12:29	N1
Anthracene	<0.330	2	1.82	91	1.91	96	55-96	5	24	mg/kg	05/27/11 12:29	N1
Azobenzene	<0.330	2	1.95	98	2.07	104	59-106	6	20	mg/kg	05/27/11 12:29	N1
Benzo(a)anthracene	<0.330	2	1.93	97	2.01	101	65-97	4	20	mg/kg	05/27/11 12:29	N1L1
Benzo(a)pyrene	<0.330	2	1.84	92	1.91	96	64-106	4	20	mg/kg	05/27/11 12:29	N1
Benzo(b)fluoranthene	<0.330	2	1.93	97	2.06	103	59-110	7	23	mg/kg	05/27/11 12:29	N1
Benzo(g,h,i)perylene	<0.330	2	1.88	94	1.96	98	55-120	4	20	mg/kg	05/27/11 12:29	N1
Benzo(k)fluoranthene	<0.330	2	2.01	101	1.98	99	60-116	2	20	mg/kg	05/27/11 12:29	N1
Benzoic Acid	<2.00	4	2.73	69	2.67	67	24-89	2	31	mg/kg	05/27/11 12:29	N1
Benzyl Alcohol	<0.330	2	1.57	79	1.77	89	59-96	12	20	mg/kg	05/27/11 12:29	N1
Benzyl Butyl Phthalate	<0.330	2	2.13	107	2.18	109	63-104	2	20	mg/kg	05/27/11 12:29	L1N1
bis(2-chloroethoxy) methane	<0.330	2	1.59	80	1.79	90	62-95	12	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroethyl) ether	<0.330	2	1.43	72	1.65	83	60-94	14	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroisopropyl) ether	<0.330	2	1.62	81	1.83	92	55-107	12	22	mg/kg	05/27/11 12:29	N1
bis(2-ethylhexyl) phthalate	<0.330	2	2.11	106	2.16	108	61-116	2	20	mg/kg	05/27/11 12:29	N1
4-Bromophenyl-phenylether	<0.330	2	1.65	83	1.71	86	72-119	4	25	mg/kg	05/27/11 12:29	N1
di-n-Butyl Phthalate	<0.330	2	1.88	94	1.98	99	64-111	5	25	mg/kg	05/27/11 12:29	N1
4-chloro-3-methylphenol	<0.330	4	3.24	81	3.40	85	53-110	5	20	mg/kg	05/27/11 12:29	N1
4-Chloroaniline	<1.00	2	1.73	87	1.92	96	33-197	10	20	mg/kg	05/27/11 12:29	N1
2-Chloronaphthalene	<0.330	2	1.62	81	1.76	88	60-93	8	20	mg/kg	05/27/11 12:29	N1
2-Chlorophenol	<0.330	4	2.93	73	3.25	81	55-99	10	20	mg/kg	05/27/11 12:29	N1
4-Chlorophenyl Phenyl Ether	<0.330	2	1.65	83	1.70	85	68-103	3	20	mg/kg	05/27/11 12:29	N1
Chrysene	<0.330	2	1.86	93	1.94	97	64-99	4	20	mg/kg	05/27/11 12:29	N1
Dibenz(a,h)Anthracene	<0.330	2	1.87	94	1.93	97	57-117	3	20	mg/kg	05/27/11 12:29	N1
Dibenzofuran	<0.330	2	1.68	84	1.75	88	62-95	4	20	mg/kg	05/27/11 12:29	N1
1,2-Dichlorobenzene	<0.330	2	1.51	76	1.68	84	58-88	11	20	mg/kg	05/27/11 12:29	N1
1,3-Dichlorobenzene	<0.330	2	1.52	76	1.67	84	58-90	9	20	mg/kg	05/27/11 12:29	N1
1,4-Dichlorobenzene	<0.330	2	1.48	74	1.65	83	59-91	11	20	mg/kg	05/27/11 12:29	N1
3,3-Dichlorobenzidine	<1.70	2	2.08	104	2.22	111	48-159	7	29	mg/kg	05/27/11 12:29	N1
2,4-Dichlorophenol	<0.500	4	2.87	72	3.25	81	53-102	12	20	mg/kg	05/27/11 12:29	N1
Diethyl Phthalate	<0.330	2	1.83	92	1.90	95	66-108	4	20	mg/kg	05/27/11 12:29	N1
Dimethyl Phthalate	<0.330	2	1.79	90	1.89	95	65-103	5	20	mg/kg	05/27/11 12:29	N1
2,4-Dimethylphenol	<0.330	4	2.92	73	3.17	79	52-91	8	20	mg/kg	05/27/11 12:29	N1
4,6-dinitro-2-methyl phenol	<2.00	4	4.02	101	4.23	106	50-119	5	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrophenol	<2.00	4	4.36	109	4.54	114	24-130	4	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrotoluene	<0.330	2	1.83	92	1.91	96	63-99	4	20	mg/kg	05/27/11 12:29	N1
2,6-Dinitrotoluene	<0.330	2	1.81	91	1.92	96	62-97	6	20	mg/kg	05/27/11 12:29	N1
Fluoranthene	<0.330	2	1.82	91	1.90	95	58-99	4	25	mg/kg	05/27/11 12:29	N1
Fluorene	<0.330	2	1.80	90	1.87	94	63-96	4	20	mg/kg	05/27/11 12:29	N1
Hexachlorobenzene	<0.330	2	1.64	82	1.76	88	61-99	7	25	mg/kg	05/27/11 12:29	N1
Hexachlorobutadiene	<0.330	2	1.43	72	1.65	83	52-91	14	20	mg/kg	05/27/11 12:29	N1
Hexachlorocyclopentadiene	<1.00	2	1.43	72	1.63	82	43-110	6	20	mg/kg	05/27/11 12:29	N1
Hexachloroethane	<0.330	2	1.49	75	1.65	83	57-95	10	20	mg/kg	05/27/11 12:29	N1
Indeno(1,2,3-c,d)Pyrene	<0.330	2	1.95	98	2.02	101	60-117	4	20	mg/kg	05/27/11 12:29	N1
Isophorone	<0.330	2	2.02	101	2.19	110	53-90	8	20	mg/kg	05/27/11 12:29	L1N1



City of Tucson / Environmental Services, Tucson, AZ
Tucson Fire Department HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858061

MB Sample Id: 603702-1-BLK

Matrix: Solid

LCS Sample Id: 603702-1-BKS

Prep Method: SW3545

Date Prep: 05/25/2011

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.330	2	1.58	79	1.73	87	59-94	9	20	mg/kg	05/27/11 12:29	N1
2-methylphenol	<0.330	4	2.95	74	3.33	83	52-101	12	20	mg/kg	05/27/11 12:29	N1
3&4-Methylphenol	<0.500	4	2.78	70	3.10	78	55-107	11	20	mg/kg	05/27/11 12:29	N1
Naphthalene	<0.330	2	1.55	78	1.73	87	60-92	11	20	mg/kg	05/27/11 12:29	N1
Nitrobenzene	<0.330	2	1.59	80	1.74	87	59-100	9	20	mg/kg	05/27/11 12:29	N1
2-Nitrophenol	<0.330	4	2.99	75	3.30	83	52-99	10	20	mg/kg	05/27/11 12:29	N1
4-Nitrophenol	<2.00	4	3.76	94	3.86	97	51-121	3	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodi-n-Propylamine	<0.330	2	1.78	89	1.96	98	55-121	10	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodiphenylamine	<0.330	2	2.41	121	2.55	128	17-149	6	53	mg/kg	05/27/11 12:29	N1
di-n-Octyl Phthalate	<0.330	2	2.10	105	2.16	108	62-123	3	22	mg/kg	05/27/11 12:29	N1
Pentachlorophenol	<0.670	4	3.33	83	3.46	87	52-90	4	23	mg/kg	05/27/11 12:29	N1
Phenanthrene	<0.330	2	1.77	89	1.88	94	62-100	6	24	mg/kg	05/27/11 12:29	N1
Phenol	<0.330	4	2.84	71	3.28	82	54-101	14	20	mg/kg	05/27/11 12:29	N1
Pyrene	<0.330	2	2.00	100	2.03	102	65-99	1	20	mg/kg	05/27/11 12:29	L1N1
1,2,4-Trichlorobenzene	<0.500	2	1.59	80	1.78	89	58-96	11	20	mg/kg	05/27/11 12:29	N1
2,4,6-Trichlorophenol	<1.00	4	2.92	73	3.13	78	56-101	7	20	mg/kg	05/27/11 12:29	N1

Project Manager: Pete Schwartz Bill to: (if different) Richard Byrd

Company Name: ERA Company Name: City of Tucson Env. Services

Address: 1670 E. River Rd. Address: 4004 S. Park Ave Bldg. 1

City, State ZIP: Tucson, AZ 85718 City, State ZIP: PO Box 7710, Tucson AZ 85726

Phone: 520-623-9221 Email: pschwartz@ci.tucsonaz.gov

Project Name: HOUST ST

Project Number: 055672.010

P.O. Number:

Sampler's Name: Wendy Smith

SAMPLE RECEIPT				ANALYSIS REQUEST (PLEASE CHECK METHOD NUMBER)																TAT	
Temperature (°C):	3-4	Temp Blank Present:	NO																	<input checked="" type="checkbox"/> Routine <input type="checkbox"/> Rush - Prelim <input type="checkbox"/> Rush - Final Prelim Due Date: Final Due Date:	
Received Intact:	<input checked="" type="checkbox"/>	Wet Ice / Blue Ice	<input checked="" type="checkbox"/>																		
Cooler Custody Seals:	Yes	Total Containers:	24																		
Sample Custody Seals:	Yes	Lab ID	11																		
Sample Identification	Matrix	Date Sampled	Time Sampled																	Sample Comments	
S-051711-MES-11	Soil	5/17/11	1520	Number of Containers	2																
TRB				12	1																
				Volatiles Organics																	
				8260B <input checked="" type="checkbox"/> 624 <input type="checkbox"/> 524.2 <input type="checkbox"/>																	
				Acrolein <input type="checkbox"/> Acrylonitrile <input type="checkbox"/> 2-CEVE <input type="checkbox"/>																	
				8260B <input type="checkbox"/> 624 <input type="checkbox"/>																	
				Semi-Volatile Organics																	
				8270C <input checked="" type="checkbox"/> 625 <input type="checkbox"/>																	
				Organochlorine Pesticides																	
				8081A <input type="checkbox"/> 608 <input type="checkbox"/>																	
				Oil & Grease (1664-HEM)																	
				TPH (1664-HEM-SGT)																	
				Metals (See Below)																	
				Total <input type="checkbox"/> Hardness <input type="checkbox"/> Ca Hardness <input type="checkbox"/>																	
				Metals (See Below)																	
				Dissolved <input type="checkbox"/> TCLP <input type="checkbox"/>																	
				Total Hexavalent Cr																	
				Dissolved Hexavalent Cr																	
				Total Cyanide <input type="checkbox"/>																	
				Amenable (Free) Cyanide <input type="checkbox"/>																	
				BOD <input type="checkbox"/>																	
				pH <input type="checkbox"/> Cond. <input type="checkbox"/> Alk <input type="checkbox"/> TDS <input type="checkbox"/> TSS <input type="checkbox"/>																	
				Cl <input type="checkbox"/> SO4 <input type="checkbox"/> F <input type="checkbox"/> Ortho-P <input type="checkbox"/>																	
				NO2 <input type="checkbox"/> NO3 (300.0) <input type="checkbox"/>																	
				NO2+NO3 (353.2) <input type="checkbox"/>																	
				TKN <input type="checkbox"/> NH3 <input type="checkbox"/>																	
				COD <input type="checkbox"/> Total-P <input type="checkbox"/>																	
				Colilert <input type="checkbox"/> E. Coli (CFU/MPN) <input type="checkbox"/>																	
				HPC <input type="checkbox"/> Fecal (CFU/MPN) <input type="checkbox"/>																	

Total 200.7 / 6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Ti Sn V Zn

Circle Method(s) and Metal(s) to be analyzed 200.8 / 6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1 / 7470A: Hg

Dissolved / TCLP 200.7 / 6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Ti Sn V Zn

Circle Method(s) and Metal(s) to be analyzed 200.8 / 6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1 / 7470A: Hg

Relinquished by: (Signature) _____ Received by: (Signature) _____ Date/Time _____

1 [Signature] [Signature] 5/17/11 1635

2 [Signature] [Signature] 5/17/11 1345

3 _____ _____ _____

Upon signing this COC, you accept Xenco terms and conditions unless otherwise agreed upon in writing. Reports are intellectual property of Xenco until paid. Samples will be held 30 days after the final report is emailed unless hereby requested. Rush charges and collection fees are pre-approved if necessary.

C.O.C. Serial # **19686**



Sample Receipt Checklist

phx 5/20/11 1345

Client Name: COT ES

Date and Time Received: 5/17/11 1635

Work Order Number: 416904

Checked by: KRB

Checklist completed by: KRB Date: 5/17/11

Logged In by: lm Date: 5/20/11

Matrix: Soil/LW Courier Name: (Client) Xenco

Reviewed by: _____ Date: _____

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples received same day of collection?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Temp: <u>3.4</u> Wet Ice Present <input checked="" type="checkbox"/>
Where was the temperature reading taken at?	Sample <input checked="" type="checkbox"/>	Temp Blank <input type="checkbox"/>	Other: _____
VOA Water – VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/> See comments
Water – Microbiological bottles have ≤ 2.5 cm headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Water – All sample pH's acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> Checked by: _____

phx 4.6

If No, list all samples and bottle types that are not acceptable in Additional Comments section. Also state any correction actions.

Sulfide Water – Bottles have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> (zero headspace ≤ than neck of bottle)
Dissolved Water Analytes – Field Filtered?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

Are samples received deemed acceptable? Yes No If No then complete section below

PC Notified	Date: _____	Init: _____	PC Init: _____
Client Notified	Date: _____	Init: _____	L/M <input type="checkbox"/> Date: _____ L/M <input type="checkbox"/> Date: _____
Contact Name: _____	Action to take:	Analyze <input type="checkbox"/>	Cancel <input type="checkbox"/> Hold <input type="checkbox"/> Other: _____
Changes/Comments made on original COC?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____
Changes made in LIMS?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____

Additional Comments: VOA vials for SX 416904-06 has sediment in containers. Client was unable to pull sample without sediment present. KRB

Analytical Report 416950
for
City of Tucson / Environmental Services

Project Manager: Richard Byrd

HQUST Site

055672.040

14-JUN-11

Collected By: Client



Celebrating 20 Years of commitment to excellence in Environmental Testing Services

3725 E. Atlanta Ave, Phoenix, AZ 85040

Ph: (602) 437-0330

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

Xenco-Tampa Mobile (EPA Lab code: FL01212): Florida (E84900)

Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-TX)

Xenco-Dallas (EPA Lab code: TX01468): Texas (T104704295-TX)

Xenco-Corpus Christi (EPA Lab code: TX02613): Texas (T104704370)

Xenco-Boca Raton (EPA Lab Code: FL01273):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):

Arizona(AZ0757), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)



14-JUN-11

Project Manager: **Richard Byrd**
City of Tucson / Environmental Services
P.O. Box 27210
Tucson, AZ 85726

Reference: XENCO Report No: **416950**
HQUST Site
Project Address:

Richard Byrd:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 416950. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 416950 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Skip Harden
Project Manager

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CASE NARRATIVE

Client Name: City of Tucson / Environmental Services

Project Name: HQUST Site

Project ID: 055672.040
Work Order Number: 416950

Report Date: 14-JUN-11
Date Received: 05/18/2011

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non nonformances and comments:

Batch: LBA-857697 Volatiles by SW 8260B

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-858061 SVOCs by SW 8270C

N1:

The MS/MSD pair was not analyzed due to the parent sample required a dilution. The dilution was high enough that it would have diluted out the spikes added.

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADEQ Arizona Data Qualifiers, Revision 3.0 9/20/2007. Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

- D1 Sample required dilution due to matrix.
- D2 Sample required dilution due to high concentration of target analyte.
- L1 The associated blank spike recovery was above laboratory acceptance limits.
- M1 Matrix spike recovery was high; the associated blank spike recovery was acceptable.
- M2 Matrix spike recovery was low; the associated blank spike recovery was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The associated blank spike recovery was acceptable.
- N1 See case narrative.
- R2 RPD/RSD exceeded the laboratory acceptance limit. See case narrative.
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.



Sample Cross Reference 416950

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
GW-051811-MES-12	W	May-18-11 07:20		416950-001
S-051811-MES-13	S	May-18-11 10:50		416950-002
S-051811-MES-14	S	May-18-11 11:00		416950-003
S-051811-MES-15	S	May-18-11 11:10		416950-004
S-051811-MES-16	S	May-18-11 11:20		416950-005
GW-051811-MES-17	W	May-18-11 13:00		416950-006
Trip Blank	W	May-18-11 07:20		416950-007



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: GW-051811-MES-12	Matrix: Ground Water	Date Received: May-18-11 15:38
Lab Sample Id: 416950-001	Date Collected: May-18-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	
Dilution Analysis:	
Seq#: 857169 Date Analyzed: 05/22/11 20:38 Date Prep: 05/22/11 18:15	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<200	200	ug/L	05/22/11 02:20	D1	10
Benzene	71-43-2	699	5.00	ug/L	05/22/11 02:20	D2	10
Bromobenzene	108-86-1	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
Bromochloromethane	74-97-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Bromodichloromethane	75-27-4	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Bromoform	75-25-2	<10.0	10.0	ug/L	05/22/11 02:20	D1	10
Bromomethane	74-83-9	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
2-Butanone	78-93-3	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
n-Butylbenzene	104-51-8	<25.0	25.0	ug/L	05/22/11 02:20	D1	10
Sec-Butylbenzene	135-98-8	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
tert-Butylbenzene	98-06-6	<25.0	25.0	ug/L	05/22/11 02:20	D1	10
Carbon Disulfide	75-15-0	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Carbon Tetrachloride	56-23-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Chlorobenzene	108-90-7	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Chloroethane	75-00-3	<40.0	40.0	ug/L	05/22/11 02:20	D1	10
Chloroform	67-66-3	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Chloromethane	74-87-3	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
2-Chlorotoluene	95-49-8	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
4-Chlorotoluene	106-43-4	<20.0	20.0	ug/L	05/22/11 02:20	D1	10
4-Isopropyltoluene	99-87-6	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
Dibromochloromethane	124-48-1	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,2-Dibromo-3-Chloropropane	96-12-8	<20.0	20.0	ug/L	05/22/11 02:20	D1	10
1,2-Dibromoethane	106-93-4	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Dibromomethane	74-95-3	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,2-Dichlorobenzene	95-50-1	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
1,3-Dichlorobenzene	541-73-1	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
1,4-Dichlorobenzene	106-46-7	<15.0	15.0	ug/L	05/22/11 02:20	D1	10
Dichlorodifluoromethane	75-71-8	<20.0	20.0	ug/L	05/22/11 02:20	D1	10
1,1-Dichloroethane	75-34-3	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,2-Dichloroethane	107-06-2	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,1-Dichloroethene	75-35-4	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
cis-1,2-Dichloroethene	156-59-2	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
trans-1,2-dichloroethene	156-60-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,2-Dichloropropane	78-87-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,3-Dichloropropane	142-28-9	<10.0	10.0	ug/L	05/22/11 02:20	D1	10
2,2-Dichloropropane	594-20-7	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,1-Dichloropropene	563-58-6	<10.0	10.0	ug/L	05/22/11 02:20	D1	10



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-051811-MES-12	Matrix: Ground Water	Date Received: May-18-11 15:38
Lab Sample Id: 416950-001	Date Collected: May-18-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
cis-1,3-Dichloropropene	10061-01-5	<10.0	10.0	ug/L	05/22/11 02:20	D1	10
trans-1,3-dichloropropene	10061-02-6	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Ethylbenzene	100-41-4	271	20.0	ug/L	05/22/11 02:20	D2	10
Hexachlorobutadiene	87-68-3	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
2-Hexanone	591-78-6	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
Isopropylbenzene	98-82-8	<25.0	25.0	ug/L	05/22/11 02:20	D1	10
Methylene Chloride	75-09-2	<30.0	30.0	ug/L	05/22/11 02:20	D1	10
Iodomethane (Methyl Iodide)	74-88-4	<20.0	20.0	ug/L	05/22/11 02:20	D1	10
4-Methyl-2-Pentanone	108-10-1	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
MTBE	1634-04-4	100	20.0	ug/L	05/22/11 02:20	D2	10
Naphthalene	91-20-3	127	50.0	ug/L	05/22/11 02:20	D2	10
n-Propylbenzene	103-65-1	51.5	20.0	ug/L	05/22/11 02:20	D2	10
Styrene	100-42-5	<10.0	10.0	ug/L	05/22/11 02:20	D1	10
1,1,1,2-Tetrachloroethane	630-20-6	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,1,2,2-Tetrachloroethane	79-34-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Tetrachloroethylene	127-18-4	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Toluene	108-88-3	1180	200	ug/L	05/22/11 20:38	D2	100
Total Trihalomethane		<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,2,3-Trichlorobenzene	87-61-6	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
1,2,4-Trichlorobenzene	120-82-1	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
1,1,1-Trichloroethane	71-55-6	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
1,1,2-Trichloroethane	79-00-5	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Trichloroethene	79-01-6	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Trichlorofluoromethane	75-69-4	<20.0	20.0	ug/L	05/22/11 02:20	D1	10
1,2,3-Trichloropropane	96-18-4	<10.0	10.0	ug/L	05/22/11 02:20	D1	10
1,2,4-Trimethylbenzene	95-63-6	455	20.0	ug/L	05/22/11 02:20	D2	10
1,3,5-Trimethylbenzene	108-67-8	124	15.0	ug/L	05/22/11 02:20	D2	10
o-Xylene	95-47-6	646	10.0	ug/L	05/22/11 02:20	D2	10
m,p-Xylenes	179601-23-1	1330	20.0	ug/L	05/22/11 02:20	D2	10
Vinyl Acetate	108-05-4	<50.0	50.0	ug/L	05/22/11 02:20	D1	10
Vinyl Chloride	75-01-4	<5.00	5.00	ug/L	05/22/11 02:20	D1	10
Total Xylenes	1330-20-7	1980	10.0	ug/L	05/22/11 02:20	D2	10

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	108	%	70-135	05/22/11 02:20	
Dibromofluoromethane	1868-53-7	107	%	69-133	05/22/11 02:20	
1,2-Dichloroethane-D4	17060-07-0	102	%	66-139	05/22/11 02:20	
Toluene-D8	2037-26-5	84	%	70-130	05/22/11 02:20	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-13	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-002	Date Collected: May-18-11 10:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 10:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.18	1.18	mg/kg	05/25/11 02:21		0.79
Benzene	71-43-2	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Bromobenzene	108-86-1	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Bromochloromethane	74-97-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Bromodichloromethane	75-27-4	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Bromoform	75-25-2	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79
Bromomethane	74-83-9	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
2-Butanone	78-93-3	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
tert-Butylbenzene	98-06-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Sec-Butylbenzene	135-98-8	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
n-Butylbenzene	104-51-8	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Carbon Disulfide	75-15-0	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Carbon Tetrachloride	56-23-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Chlorobenzene	108-90-7	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Chloroethane	75-00-3	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Chloroform	67-66-3	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Chloromethane	74-87-3	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
2-Chlorotoluene	95-49-8	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
4-Chlorotoluene	106-43-4	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,2-Dibromo-3-Chloropropane	96-12-8	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Dibromochloromethane	124-48-1	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,2-Dibromoethane	106-93-4	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Dibromomethane	74-95-3	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,2-Dichlorobenzene	95-50-1	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,3-Dichlorobenzene	541-73-1	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,4-Dichlorobenzene	106-46-7	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Dichlorodifluoromethane	75-71-8	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
1,2-Dichloroethane	107-06-2	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,1-Dichloroethane	75-34-3	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
trans-1,2-dichloroethene	156-60-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
cis-1,2-Dichloroethene	156-59-2	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,1-Dichloroethene	75-35-4	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79
2,2-Dichloropropane	594-20-7	<0.197	0.197	mg/kg	05/25/11 02:21	L1	0.79
1,3-Dichloropropane	142-28-9	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,2-Dichloropropane	78-87-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
trans-1,3-dichloropropene	10061-02-6	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,1-Dichloropropene	563-58-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
cis-1,3-Dichloropropene	10061-01-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Ethylbenzene	100-41-4	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-13	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-002	Date Collected: May-18-11 10:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 10:50
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
2-Hexanone	591-78-6	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Iodomethane (Methyl Iodide)	74-88-4	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Naphthalene	91-20-3	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Isopropylbenzene	98-82-8	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Methylene Chloride	75-09-2	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
4-Methyl-2-Pentanone	108-10-1	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
MTBE	1634-04-4	1.32	0.197	mg/kg	05/25/11 02:21		0.79
n-Propylbenzene	103-65-1	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Styrene	100-42-5	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,1,1,2-Tetrachloroethane	630-20-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,1,2,2-Tetrachloroethane	79-34-5	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79
Tetrachloroethylene	127-18-4	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Toluene	108-88-3	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79
1,2,4-Trichlorobenzene	120-82-1	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,2,3-Trichlorobenzene	87-61-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,1,2-Trichloroethane	79-00-5	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
1,1,1-Trichloroethane	71-55-6	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Trichloroethene	79-01-6	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
Trichlorofluoromethane	75-69-4	<0.393	0.393	mg/kg	05/25/11 02:21	V1	0.79
1,2,3-Trichloropropane	96-18-4	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,2,4-Trimethylbenzene	95-63-6	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
1,3,5-Trimethylbenzene	108-67-8	<0.197	0.197	mg/kg	05/25/11 02:21		0.79
Vinyl Acetate	108-05-4	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
Vinyl Chloride	75-01-4	<0.393	0.393	mg/kg	05/25/11 02:21		0.79
o-Xylene	95-47-6	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79
m,p-Xylenes	179601-23-1	<0.0786	0.0786	mg/kg	05/25/11 02:21		0.79
Total Xylenes	1330-20-7	<0.0393	0.0393	mg/kg	05/25/11 02:21		0.79

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	92	%	62-123	05/25/11 02:21	
Dibromofluoromethane	1868-53-7	99	%	52-140	05/25/11 02:21	
1,2-Dichloroethane-D4	17060-07-0	115	%	54-133	05/25/11 02:21	
Toluene-D8	2037-26-5	91	%	63-126	05/25/11 02:21	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-13	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-002	Date Collected: May-18-11 10:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 19:02		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 19:02		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 19:02	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 19:02		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 19:02		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 19:02	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 19:02		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 19:02		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 19:02		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 19:02		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 19:02		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 19:02		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 19:02		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 19:02		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 19:02		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 19:02		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 19:02		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 19:02		1



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-13	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-002	Date Collected: May-18-11 10:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 19:02		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 19:02		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 19:02		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 19:02	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 19:02		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 19:02		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 19:02		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 19:02		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 19:02		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 19:02		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 19:02		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 19:02		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 19:02		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 19:02		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 19:02		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 19:02	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 19:02		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 19:02		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	64	%	44-103	05/31/11 19:02	
2-Fluorophenol	367-12-4	49	%	15-111	05/31/11 19:02	
Nitrobenzene-d5	4165-60-0	45	%	45-109	05/31/11 19:02	
Phenol-d6	13127-88-3	50	%	37-105	05/31/11 19:02	
Terphenyl-D14	1718-51-0	79	%	41-118	05/31/11 19:02	
2,4,6-Tribromophenol	118-79-6	37	%	10-124	05/31/11 19:02	
2-Chlorophenol-D4	93951-73-6	49	%	24-110	05/31/11 19:02	
1,2-Dichlorobenzene-D4	2199-69-1	53	%	38-102	05/31/11 19:02	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-14	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-003	Date Collected: May-18-11 11:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A	% Moisture:
Tech: OEM	Date Prep: May-18-11 11:00	Basis: Wet Weight
Analyst: OEM		
Seq Number: 857697		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.33	1.33	mg/kg	05/25/11 02:47		0.88
Benzene	71-43-2	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Bromobenzene	108-86-1	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Bromochloromethane	74-97-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Bromodichloromethane	75-27-4	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Bromoform	75-25-2	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88
Bromomethane	74-83-9	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
2-Butanone	78-93-3	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
tert-Butylbenzene	98-06-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Sec-Butylbenzene	135-98-8	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
n-Butylbenzene	104-51-8	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Carbon Disulfide	75-15-0	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Carbon Tetrachloride	56-23-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Chlorobenzene	108-90-7	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Chloroethane	75-00-3	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Chloroform	67-66-3	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Chloromethane	74-87-3	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
2-Chlorotoluene	95-49-8	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
4-Chlorotoluene	106-43-4	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,2-Dibromo-3-Chloropropane	96-12-8	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Dibromochloromethane	124-48-1	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,2-Dibromoethane	106-93-4	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Dibromomethane	74-95-3	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,2-Dichlorobenzene	95-50-1	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,3-Dichlorobenzene	541-73-1	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,4-Dichlorobenzene	106-46-7	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Dichlorodifluoromethane	75-71-8	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
1,2-Dichloroethane	107-06-2	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,1-Dichloroethane	75-34-3	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
trans-1,2-dichloroethene	156-60-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
cis-1,2-Dichloroethene	156-59-2	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,1-Dichloroethene	75-35-4	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88
2,2-Dichloropropane	594-20-7	<0.221	0.221	mg/kg	05/25/11 02:47	L1	0.88
1,3-Dichloropropane	142-28-9	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,2-Dichloropropane	78-87-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
trans-1,3-dichloropropene	10061-02-6	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,1-Dichloropropene	563-58-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
cis-1,3-Dichloropropene	10061-01-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Ethylbenzene	100-41-4	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-14	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-003	Date Collected: May-18-11 11:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 11:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
2-Hexanone	591-78-6	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Iodomethane (Methyl Iodide)	74-88-4	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Isopropylbenzene	98-82-8	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Naphthalene	91-20-3	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Methylene Chloride	75-09-2	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
4-Methyl-2-Pentanone	108-10-1	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
MTBE	1634-04-4	0.801	0.221	mg/kg	05/25/11 02:47		0.88
n-Propylbenzene	103-65-1	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Styrene	100-42-5	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,1,1,2-Tetrachloroethane	630-20-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,1,2,2-Tetrachloroethane	79-34-5	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88
Tetrachloroethylene	127-18-4	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Toluene	108-88-3	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88
1,2,4-Trichlorobenzene	120-82-1	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,2,3-Trichlorobenzene	87-61-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,1,2-Trichloroethane	79-00-5	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
1,1,1-Trichloroethane	71-55-6	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Trichloroethene	79-01-6	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
Trichlorofluoromethane	75-69-4	<0.442	0.442	mg/kg	05/25/11 02:47	V1	0.88
1,2,3-Trichloropropane	96-18-4	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,2,4-Trimethylbenzene	95-63-6	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
1,3,5-Trimethylbenzene	108-67-8	<0.221	0.221	mg/kg	05/25/11 02:47		0.88
Vinyl Acetate	108-05-4	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
Vinyl Chloride	75-01-4	<0.442	0.442	mg/kg	05/25/11 02:47		0.88
o-Xylene	95-47-6	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88
m,p-Xylenes	179601-23-1	<0.0883	0.0883	mg/kg	05/25/11 02:47		0.88
Total Xylenes	1330-20-7	<0.0442	0.0442	mg/kg	05/25/11 02:47		0.88

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	87	%	62-123	05/25/11 02:47	
Dibromofluoromethane	1868-53-7	92	%	52-140	05/25/11 02:47	
1,2-Dichloroethane-D4	17060-07-0	109	%	54-133	05/25/11 02:47	
Toluene-D8	2037-26-5	87	%	63-126	05/25/11 02:47	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-14	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-003	Date Collected: May-18-11 11:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/31/11 19:49		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/31/11 19:49		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/31/11 19:49	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/31/11 19:49		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/31/11 19:49		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/31/11 19:49	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/31/11 19:49		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/31/11 19:49		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/31/11 19:49		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/31/11 19:49		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/31/11 19:49		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/31/11 19:49		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/31/11 19:49		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/31/11 19:49		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/31/11 19:49		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/31/11 19:49		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/31/11 19:49		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/31/11 19:49		1



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-14	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-003	Date Collected: May-18-11 11:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/31/11 19:49		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/31/11 19:49		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/31/11 19:49		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/31/11 19:49	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/31/11 19:49		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/31/11 19:49		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/31/11 19:49		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/31/11 19:49		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/31/11 19:49		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/31/11 19:49		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/31/11 19:49		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/31/11 19:49		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/31/11 19:49		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/31/11 19:49		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/31/11 19:49		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/31/11 19:49	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/31/11 19:49		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/31/11 19:49		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	71	%	44-103	05/31/11 19:49	
2-Fluorophenol	367-12-4	60	%	15-111	05/31/11 19:49	
Nitrobenzene-d5	4165-60-0	52	%	45-109	05/31/11 19:49	
Phenol-d6	13127-88-3	60	%	37-105	05/31/11 19:49	
Terphenyl-D14	1718-51-0	80	%	41-118	05/31/11 19:49	
2,4,6-Tribromophenol	118-79-6	46	%	10-124	05/31/11 19:49	
2-Chlorophenol-D4	93951-73-6	61	%	24-110	05/31/11 19:49	
1,2-Dichlorobenzene-D4	2199-69-1	58	%	38-102	05/31/11 19:49	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051811-MES-15	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-004	Date Collected: May-18-11 11:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 11:10
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.32	1.32	mg/kg	05/25/11 03:14		0.88
Benzene	71-43-2	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Bromobenzene	108-86-1	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Bromochloromethane	74-97-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Bromodichloromethane	75-27-4	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Bromoform	75-25-2	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88
Bromomethane	74-83-9	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
2-Butanone	78-93-3	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
tert-Butylbenzene	98-06-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Sec-Butylbenzene	135-98-8	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
n-Butylbenzene	104-51-8	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Carbon Disulfide	75-15-0	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Carbon Tetrachloride	56-23-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Chlorobenzene	108-90-7	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Chloroethane	75-00-3	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Chloroform	67-66-3	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Chloromethane	74-87-3	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
2-Chlorotoluene	95-49-8	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
4-Chlorotoluene	106-43-4	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,2-Dibromo-3-Chloropropane	96-12-8	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Dibromochloromethane	124-48-1	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,2-Dibromoethane	106-93-4	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Dibromomethane	74-95-3	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,2-Dichlorobenzene	95-50-1	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,3-Dichlorobenzene	541-73-1	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,4-Dichlorobenzene	106-46-7	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Dichlorodifluoromethane	75-71-8	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
1,2-Dichloroethane	107-06-2	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,1-Dichloroethane	75-34-3	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
trans-1,2-dichloroethene	156-60-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
cis-1,2-Dichloroethene	156-59-2	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,1-Dichloroethene	75-35-4	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88
2,2-Dichloropropane	594-20-7	<0.220	0.220	mg/kg	05/25/11 03:14	L1	0.88
1,3-Dichloropropane	142-28-9	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,2-Dichloropropane	78-87-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
trans-1,3-dichloropropene	10061-02-6	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,1-Dichloropropene	563-58-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
cis-1,3-Dichloropropene	10061-01-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Ethylbenzene	100-41-4	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-15	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-004	Date Collected: May-18-11 11:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 11:10
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
2-Hexanone	591-78-6	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Iodomethane (Methyl Iodide)	74-88-4	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Naphthalene	91-20-3	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Isopropylbenzene	98-82-8	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Methylene Chloride	75-09-2	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
4-Methyl-2-Pentanone	108-10-1	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
MTBE	1634-04-4	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
n-Propylbenzene	103-65-1	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Styrene	100-42-5	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,1,1,2-Tetrachloroethane	630-20-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,1,2,2-Tetrachloroethane	79-34-5	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88
Tetrachloroethylene	127-18-4	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Toluene	108-88-3	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88
1,2,4-Trichlorobenzene	120-82-1	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,2,3-Trichlorobenzene	87-61-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,1,2-Trichloroethane	79-00-5	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
1,1,1-Trichloroethane	71-55-6	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Trichloroethene	79-01-6	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
Trichlorofluoromethane	75-69-4	<0.441	0.441	mg/kg	05/25/11 03:14	V1	0.88
1,2,3-Trichloropropane	96-18-4	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,2,4-Trimethylbenzene	95-63-6	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
1,3,5-Trimethylbenzene	108-67-8	<0.220	0.220	mg/kg	05/25/11 03:14		0.88
Vinyl Acetate	108-05-4	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
Vinyl Chloride	75-01-4	<0.441	0.441	mg/kg	05/25/11 03:14		0.88
o-Xylene	95-47-6	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88
m,p-Xylenes	179601-23-1	<0.0882	0.0882	mg/kg	05/25/11 03:14		0.88
Total Xylenes	1330-20-7	<0.0441	0.0441	mg/kg	05/25/11 03:14		0.88

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	88	%	62-123	05/25/11 03:14	
Dibromofluoromethane	1868-53-7	97	%	52-140	05/25/11 03:14	
1,2-Dichloroethane-D4	17060-07-0	114	%	54-133	05/25/11 03:14	
Toluene-D8	2037-26-5	88	%	63-126	05/25/11 03:14	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051811-MES-15	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-004	Date Collected: May-18-11 11:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	05/31/11 20:36		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	05/31/11 20:36		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	05/31/11 20:36	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	05/31/11 20:36		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	05/31/11 20:36		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	05/31/11 20:36	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	05/31/11 20:36		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	05/31/11 20:36		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	05/31/11 20:36		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	05/31/11 20:36		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	05/31/11 20:36		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	05/31/11 20:36		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	05/31/11 20:36		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	05/31/11 20:36		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	05/31/11 20:36		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	05/31/11 20:36		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	05/31/11 20:36		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	05/31/11 20:36		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-15	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-004	Date Collected: May-18-11 11:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	05/31/11 20:36		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	05/31/11 20:36		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	05/31/11 20:36		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	05/31/11 20:36	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	05/31/11 20:36		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
3&4-Methylphenol		<0.498	0.498	mg/kg	05/31/11 20:36		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	05/31/11 20:36		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	05/31/11 20:36		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	05/31/11 20:36		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	05/31/11 20:36		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	05/31/11 20:36		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	05/31/11 20:36		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	05/31/11 20:36		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	05/31/11 20:36		1
Phenol	108-95-2	<0.328	0.328	mg/kg	05/31/11 20:36		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	05/31/11 20:36	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	05/31/11 20:36		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	05/31/11 20:36		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	71	%	44-103	05/31/11 20:36	
2-Fluorophenol	367-12-4	57	%	15-111	05/31/11 20:36	
Nitrobenzene-d5	4165-60-0	47	%	45-109	05/31/11 20:36	
Phenol-d6	13127-88-3	60	%	37-105	05/31/11 20:36	
Terphenyl-D14	1718-51-0	86	%	41-118	05/31/11 20:36	
2,4,6-Tribromophenol	118-79-6	46	%	10-124	05/31/11 20:36	
2-Chlorophenol-D4	93951-73-6	57	%	24-110	05/31/11 20:36	
1,2-Dichlorobenzene-D4	2199-69-1	51	%	38-102	05/31/11 20:36	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-16	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-005	Date Collected: May-18-11 11:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 11:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.28	1.28	mg/kg	05/25/11 20:03		0.85
Benzene	71-43-2	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Bromobenzene	108-86-1	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Bromochloromethane	74-97-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Bromodichloromethane	75-27-4	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Bromoform	75-25-2	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85
Bromomethane	74-83-9	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
2-Butanone	78-93-3	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
tert-Butylbenzene	98-06-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Sec-Butylbenzene	135-98-8	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
n-Butylbenzene	104-51-8	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Carbon Disulfide	75-15-0	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Carbon Tetrachloride	56-23-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Chlorobenzene	108-90-7	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Chloroethane	75-00-3	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Chloroform	67-66-3	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Chloromethane	74-87-3	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
2-Chlorotoluene	95-49-8	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
4-Chlorotoluene	106-43-4	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,2-Dibromo-3-Chloropropane	96-12-8	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Dibromochloromethane	124-48-1	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,2-Dibromoethane	106-93-4	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Dibromomethane	74-95-3	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,2-Dichlorobenzene	95-50-1	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,3-Dichlorobenzene	541-73-1	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,4-Dichlorobenzene	106-46-7	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Dichlorodifluoromethane	75-71-8	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
1,2-Dichloroethane	107-06-2	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,1-Dichloroethane	75-34-3	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
trans-1,2-dichloroethene	156-60-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
cis-1,2-Dichloroethene	156-59-2	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,1-Dichloroethene	75-35-4	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85
2,2-Dichloropropane	594-20-7	<0.213	0.213	mg/kg	05/25/11 20:03	L1	0.85
1,3-Dichloropropane	142-28-9	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,2-Dichloropropane	78-87-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
trans-1,3-dichloropropene	10061-02-6	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,1-Dichloropropene	563-58-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
cis-1,3-Dichloropropene	10061-01-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Ethylbenzene	100-41-4	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-16	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-005	Date Collected: May-18-11 11:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-18-11 11:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
2-Hexanone	591-78-6	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Iodomethane (Methyl Iodide)	74-88-4	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Isopropylbenzene	98-82-8	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Naphthalene	91-20-3	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Methylene Chloride	75-09-2	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
4-Methyl-2-Pentanone	108-10-1	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
MTBE	1634-04-4	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
n-Propylbenzene	103-65-1	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Styrene	100-42-5	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,1,1,2-Tetrachloroethane	630-20-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,1,2,2-Tetrachloroethane	79-34-5	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85
Tetrachloroethylene	127-18-4	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Toluene	108-88-3	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85
1,2,4-Trichlorobenzene	120-82-1	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,2,3-Trichlorobenzene	87-61-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,1,2-Trichloroethane	79-00-5	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
1,1,1-Trichloroethane	71-55-6	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Trichloroethene	79-01-6	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
Trichlorofluoromethane	75-69-4	<0.427	0.427	mg/kg	05/25/11 20:03	V1	0.85
1,2,3-Trichloropropane	96-18-4	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,2,4-Trimethylbenzene	95-63-6	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
1,3,5-Trimethylbenzene	108-67-8	<0.213	0.213	mg/kg	05/25/11 20:03		0.85
Vinyl Acetate	108-05-4	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
Vinyl Chloride	75-01-4	<0.427	0.427	mg/kg	05/25/11 20:03		0.85
o-Xylene	95-47-6	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85
m,p-Xylenes	179601-23-1	<0.0853	0.0853	mg/kg	05/25/11 20:03		0.85
Total Xylenes	1330-20-7	<0.0427	0.0427	mg/kg	05/25/11 20:03		0.85

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	98	%	62-123	05/25/11 20:03	
Dibromofluoromethane	1868-53-7	98	%	52-140	05/25/11 20:03	
1,2-Dichloroethane-D4	17060-07-0	118	%	54-133	05/25/11 20:03	
Toluene-D8	2037-26-5	99	%	63-126	05/25/11 20:03	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-16	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-005	Date Collected: May-18-11 11:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 21:22		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 21:22		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 21:22	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 21:22		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 21:22		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 21:22	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 21:22		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 21:22		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 21:22		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 21:22		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 21:22		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 21:22		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 21:22		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 21:22		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 21:22		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 21:22		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 21:22		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 21:22		1



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051811-MES-16	Matrix: Soil	Date Received: May-18-11 15:38
Lab Sample Id: 416950-005	Date Collected: May-18-11 11:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 21:22		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 21:22		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 21:22		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 21:22	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 21:22		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 21:22		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 21:22		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 21:22		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 21:22		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 21:22		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 21:22		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 21:22		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 21:22		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 21:22		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 21:22		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 21:22	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 21:22		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 21:22		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	74	%	44-103	05/31/11 21:22	
2-Fluorophenol	367-12-4	68	%	15-111	05/31/11 21:22	
Nitrobenzene-d5	4165-60-0	60	%	45-109	05/31/11 21:22	
Phenol-d6	13127-88-3	69	%	37-105	05/31/11 21:22	
Terphenyl-D14	1718-51-0	81	%	41-118	05/31/11 21:22	
2,4,6-Tribromophenol	118-79-6	57	%	10-124	05/31/11 21:22	
2-Chlorophenol-D4	93951-73-6	68	%	24-110	05/31/11 21:22	
1,2-Dichlorobenzene-D4	2199-69-1	59	%	38-102	05/31/11 21:22	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: GW-051811-MES-17	Matrix: Ground Water	Date Received: May-18-11 15:38
Lab Sample Id: 416950-006	Date Collected: May-18-11 13:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	
Dilution Analysis:	
Seq#: 856979 Date Analyzed: 05/22/11 01:57 Date Prep: 05/21/11 16:15	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	05/22/11 22:09		1
Benzene	71-43-2	381	5.00	ug/L	05/22/11 01:57	D2	10
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/22/11 22:09		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/22/11 22:09		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/22/11 22:09		1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/22/11 22:09		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/22/11 22:09		1
2-Butanone	78-93-3	10.5	5.00	ug/L	05/22/11 22:09		1
n-Butylbenzene	104-51-8	11.4	2.50	ug/L	05/22/11 22:09		1
Sec-Butylbenzene	135-98-8	4.93	1.50	ug/L	05/22/11 22:09		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/22/11 22:09		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	05/22/11 22:09		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/22/11 22:09		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/22/11 22:09		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/22/11 22:09		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/22/11 22:09		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/22/11 22:09		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/22/11 22:09		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/22/11 22:09		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	05/22/11 22:09		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/22/11 22:09		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/22/11 22:09		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/22/11 22:09		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/22/11 22:09		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/22/11 22:09		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/22/11 22:09		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/22/11 22:09		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/22/11 22:09		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/22/11 22:09		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	05/22/11 22:09		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/22/11 22:09		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/22/11 22:09		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/22/11 22:09		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/22/11 22:09		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/22/11 22:09		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/22/11 22:09		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/22/11 22:09		1



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City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-051811-MES-17	Matrix: Ground Water	Date Received: May-18-11 15:38
Lab Sample Id: 416950-006	Date Collected: May-18-11 13:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/22/11 22:09		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/22/11 22:09		1
Ethylbenzene	100-41-4	203	20.0	ug/L	05/22/11 01:57	D2	10
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/22/11 22:09		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	05/22/11 22:09		1
Isopropylbenzene	98-82-8	17.2	2.50	ug/L	05/22/11 22:09		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/22/11 22:09		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/22/11 22:09		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/22/11 22:09		1
MTBE	1634-04-4	80.7	2.00	ug/L	05/22/11 22:09		1
Naphthalene	91-20-3	91.2	5.00	ug/L	05/22/11 22:09		1
n-Propylbenzene	103-65-1	29.4	2.00	ug/L	05/22/11 22:09		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/22/11 22:09		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/22/11 22:09		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/22/11 22:09		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/22/11 22:09		1
Toluene	108-88-3	152	20.0	ug/L	05/22/11 01:57	D2	10
Total Trihalomethane		<0.500	0.500	ug/L	05/22/11 22:09		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/22/11 22:09		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/22/11 22:09		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/22/11 22:09		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/22/11 22:09		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/22/11 22:09		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/22/11 22:09		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/22/11 22:09		1
1,2,4-Trimethylbenzene	95-63-6	175	20.0	ug/L	05/22/11 01:57	D2	10
1,3,5-Trimethylbenzene	108-67-8	48.0	1.50	ug/L	05/22/11 22:09		1
o-Xylene	95-47-6	177	10.0	ug/L	05/22/11 01:57	D2	10
m,p-Xylenes	179601-23-1	361	20.0	ug/L	05/22/11 01:57	D2	10
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/22/11 22:09		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/22/11 22:09		1
Total Xylenes	1330-20-7	538	10.0	ug/L	05/22/11 01:57	D2	10

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	103	%	70-135	05/22/11 22:09	
Dibromofluoromethane	1868-53-7	94	%	69-133	05/22/11 22:09	
1,2-Dichloroethane-D4	17060-07-0	91	%	66-139	05/22/11 22:09	
Toluene-D8	2037-26-5	88	%	70-130	05/22/11 22:09	



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-18-11 15:38
Lab Sample Id: 416950-007	Date Collected: May-18-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	05/21/11 22:33		1
Benzene	71-43-2	<0.500	0.500	ug/L	05/21/11 22:33		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/21/11 22:33		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/21/11 22:33		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/21/11 22:33		1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/21/11 22:33		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/21/11 22:33		1
2-Butanone	78-93-3	<5.00	5.00	ug/L	05/21/11 22:33		1
n-Butylbenzene	104-51-8	<2.50	2.50	ug/L	05/21/11 22:33		1
Sec-Butylbenzene	135-98-8	<1.50	1.50	ug/L	05/21/11 22:33		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/21/11 22:33		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	05/21/11 22:33		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/21/11 22:33		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/21/11 22:33		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/21/11 22:33		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/21/11 22:33		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/21/11 22:33		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/21/11 22:33		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/21/11 22:33		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	05/21/11 22:33		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/21/11 22:33		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/21/11 22:33		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/21/11 22:33		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/21/11 22:33		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/21/11 22:33		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/21/11 22:33		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/21/11 22:33		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/21/11 22:33		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/21/11 22:33		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	05/21/11 22:33		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/21/11 22:33		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/21/11 22:33		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/21/11 22:33		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/21/11 22:33		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/21/11 22:33		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/21/11 22:33		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/21/11 22:33		1
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/21/11 22:33		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/21/11 22:33		1
Ethylbenzene	100-41-4	<2.00	2.00	ug/L	05/21/11 22:33		1



Certificate of Analytical Results 416950

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-18-11 15:38
Lab Sample Id: 416950-007	Date Collected: May-18-11 07:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/21/11 22:33		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	05/21/11 22:33		1
Isopropylbenzene	98-82-8	<2.50	2.50	ug/L	05/21/11 22:33		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/21/11 22:33		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/21/11 22:33		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/21/11 22:33		1
MTBE	1634-04-4	<2.00	2.00	ug/L	05/21/11 22:33		1
Naphthalene	91-20-3	<5.00	5.00	ug/L	05/21/11 22:33		1
n-Propylbenzene	103-65-1	<2.00	2.00	ug/L	05/21/11 22:33		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/21/11 22:33		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/21/11 22:33		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/21/11 22:33		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/21/11 22:33		1
Toluene	108-88-3	<2.00	2.00	ug/L	05/21/11 22:33		1
Total Trihalomethane		<0.500	0.500	ug/L	05/21/11 22:33		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/21/11 22:33		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/21/11 22:33		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/21/11 22:33		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/21/11 22:33		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/21/11 22:33		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/21/11 22:33		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/21/11 22:33		1
1,2,4-Trimethylbenzene	95-63-6	<2.00	2.00	ug/L	05/21/11 22:33		1
1,3,5-Trimethylbenzene	108-67-8	<1.50	1.50	ug/L	05/21/11 22:33		1
o-Xylene	95-47-6	<1.00	1.00	ug/L	05/21/11 22:33		1
m,p-Xylenes	179601-23-1	<2.00	2.00	ug/L	05/21/11 22:33		1
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/21/11 22:33		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/21/11 22:33		1
Total Xylenes	1330-20-7	<1.00	1.00	ug/L	05/21/11 22:33		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	104	%	70-135	05/21/11 22:33	
Dibromofluoromethane	1868-53-7	107	%	69-133	05/21/11 22:33	
1,2-Dichloroethane-D4	17060-07-0	106	%	66-139	05/21/11 22:33	
Toluene-D8	2037-26-5	86	%	70-130	05/21/11 22:33	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 416950,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BLK

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 19:30	
Dibromofluoromethane	107	69-133	%	05/22/2011 19:30	
1,2-Dichloroethane-D4	104	66-139	%	05/22/2011 19:30	
Toluene-D8	85	70-130	%	05/22/2011 19:30	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BKS

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 19:53	
Dibromofluoromethane	100	69-133	%	05/22/2011 19:53	
1,2-Dichloroethane-D4	100	66-139	%	05/22/2011 19:53	
Toluene-D8	90	70-130	%	05/22/2011 19:53	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BSD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 20:15	
Dibromofluoromethane	99	69-133	%	05/22/2011 20:15	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 20:15	
Toluene-D8	90	70-130	%	05/22/2011 20:15	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 S

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 21:01	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:01	
1,2-Dichloroethane-D4	95	66-139	%	05/22/2011 21:01	
Toluene-D8	89	70-130	%	05/22/2011 21:01	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 SD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 21:24	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:24	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 21:24	
Toluene-D8	90	70-130	%	05/22/2011 21:24	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 416950,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BLK

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/21/2011 17:16	
Dibromofluoromethane	100	69-133	%	05/21/2011 17:16	
1,2-Dichloroethane-D4	98	66-139	%	05/21/2011 17:16	
Toluene-D8	85	70-130	%	05/21/2011 17:16	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BKS

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 19:09	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:09	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:09	
Toluene-D8	85	70-130	%	05/21/2011 19:09	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BSD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	104	70-135	%	05/21/2011 19:32	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:32	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:32	
Toluene-D8	84	70-130	%	05/21/2011 19:32	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 S

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 23:19	
Dibromofluoromethane	105	69-133	%	05/21/2011 23:19	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:19	
Toluene-D8	86	70-130	%	05/21/2011 23:19	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 SD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	105	70-135	%	05/21/2011 23:42	
Dibromofluoromethane	107	69-133	%	05/21/2011 23:42	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:42	
Toluene-D8	84	70-130	%	05/21/2011 23:42	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 416950,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BLK

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	108	62-123	%	05/24/2011 20:39	
Dibromofluoromethane	100	52-140	%	05/24/2011 20:39	
1,2-Dichloroethane-D4	123	54-133	%	05/24/2011 20:39	
Toluene-D8	104	63-126	%	05/24/2011 20:39	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BKS

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	62-123	%	05/24/2011 21:05	
Dibromofluoromethane	103	52-140	%	05/24/2011 21:05	
1,2-Dichloroethane-D4	118	54-133	%	05/24/2011 21:05	
Toluene-D8	100	63-126	%	05/24/2011 21:05	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BSD

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	100	62-123	%	05/24/2011 21:31	
Dibromofluoromethane	105	52-140	%	05/24/2011 21:31	
1,2-Dichloroethane-D4	117	54-133	%	05/24/2011 21:31	
Toluene-D8	99	63-126	%	05/24/2011 21:31	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 S

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:23	
Dibromofluoromethane	86	52-140	%	05/25/2011 21:23	
1,2-Dichloroethane-D4	93	54-133	%	05/25/2011 21:23	
Toluene-D8	82	63-126	%	05/25/2011 21:23	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 SD

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:50	
Dibromofluoromethane	78	52-140	%	05/25/2011 21:50	
1,2-Dichloroethane-D4	87	54-133	%	05/25/2011 21:50	
Toluene-D8	81	63-126	%	05/25/2011 21:50	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 416950,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BLK

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	71	44-103	%	05/27/2011 11:38	
2-Fluorophenol	65	15-111	%	05/27/2011 11:38	
Nitrobenzene-d5	69	45-109	%	05/27/2011 11:38	
Phenol-d6	69	37-105	%	05/27/2011 11:38	
Terphenyl-D14	87	41-118	%	05/27/2011 11:38	
2,4,6-Tribromophenol	53	10-124	%	05/27/2011 11:38	
2-Chlorophenol-D4	70	24-110	%	05/27/2011 11:38	
1,2-Dichlorobenzene-D4	70	38-102	%	05/27/2011 11:38	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BKS

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	80	44-103	%	05/27/2011 12:29	
2-Fluorophenol	67	15-111	%	05/27/2011 12:29	
Nitrobenzene-d5	76	45-109	%	05/27/2011 12:29	
Phenol-d6	75	37-105	%	05/27/2011 12:29	
Terphenyl-D14	91	41-118	%	05/27/2011 12:29	
2,4,6-Tribromophenol	73	10-124	%	05/27/2011 12:29	
2-Chlorophenol-D4	73	24-110	%	05/27/2011 12:29	
1,2-Dichlorobenzene-D4	74	38-102	%	05/27/2011 12:29	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BSD

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	85	44-103	%	05/27/2011 13:21	
2-Fluorophenol	76	15-111	%	05/27/2011 13:21	
Nitrobenzene-d5	85	45-109	%	05/27/2011 13:21	
Phenol-d6	81	37-105	%	05/27/2011 13:21	
Terphenyl-D14	94	41-118	%	05/27/2011 13:21	
2,4,6-Tribromophenol	78	10-124	%	05/27/2011 13:21	
2-Chlorophenol-D4	81	24-110	%	05/27/2011 13:21	
1,2-Dichlorobenzene-D4	81	38-102	%	05/27/2011 13:21	



City of Tucson / Environmental Services, Tucson, AZ

HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

MB Sample Id: 603413-1-BLK

Matrix: Water

LCS Sample Id: 603413-1-BKS

Prep Method: SW5030C

Date Prep: 05/22/2011

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	39.0	98	37.1	93	55-165	5	28	ug/L	05/22/11 19:53	
Benzene	<0.500	20	19.5	98	20.0	100	70-130	3	20	ug/L	05/22/11 19:53	
Bromobenzene	<1.50	20	17.8	89	19.2	96	70-130	8	20	ug/L	05/22/11 19:53	
Bromochloromethane	<0.500	20	20.4	102	20.4	102	67-125	0	24	ug/L	05/22/11 19:53	
Bromodichloromethane	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/22/11 19:53	
Bromoform	<1.00	20	20.4	102	21.2	106	69-130	4	20	ug/L	05/22/11 19:53	
Bromomethane	<5.00	20	20.9	105	22.7	114	58-138	8	25	ug/L	05/22/11 19:53	
2-Butanone	<5.00	40	43.1	108	40.4	101	58-146	6	27	ug/L	05/22/11 19:53	
n-Butylbenzene	<2.50	20	19.1	96	20.4	102	58-128	7	20	ug/L	05/22/11 19:53	
Sec-Butylbenzene	<1.50	20	19.1	96	20.5	103	61-133	7	20	ug/L	05/22/11 19:53	
tert-Butylbenzene	<2.50	20	19.1	96	20.7	104	65-128	8	20	ug/L	05/22/11 19:53	
Carbon Disulfide	<0.500	20	22.1	111	22.8	114	59-138	3	22	ug/L	05/22/11 19:53	
Carbon Tetrachloride	<0.500	20	20.6	103	21.8	109	57-140	6	21	ug/L	05/22/11 19:53	
Chlorobenzene	<0.500	20	18.5	93	19.4	97	70-130	5	20	ug/L	05/22/11 19:53	
Chloroethane	<4.00	20	17.3	87	17.5	88	60-146	1	24	ug/L	05/22/11 19:53	
Chloroform	<0.500	20	19.7	99	20.0	100	66-128	2	24	ug/L	05/22/11 19:53	
Chloromethane	<5.00	20	18.9	95	18.4	92	47-144	3	26	ug/L	05/22/11 19:53	
2-Chlorotoluene	<1.50	20	18.2	91	19.2	96	70-130	5	20	ug/L	05/22/11 19:53	
4-Chlorotoluene	<2.00	20	18.8	94	19.7	99	70-130	5	28	ug/L	05/22/11 19:53	
4-Isopropyltoluene	<1.50	20	19.6	98	21.3	107	67-135	8	20	ug/L	05/22/11 19:53	
Dibromochloromethane	<0.500	20	20.7	104	21.5	108	70-130	4	20	ug/L	05/22/11 19:53	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.2	101	60-128	1	21	ug/L	05/22/11 19:53	
1,2-Dibromoethane	<0.500	20	20.3	102	20.8	104	70-130	2	20	ug/L	05/22/11 19:53	
Dibromomethane	<0.500	20	20.0	100	20.6	103	70-130	3	23	ug/L	05/22/11 19:53	
1,2-Dichlorobenzene	<1.50	20	19.1	96	20.3	102	70-130	6	20	ug/L	05/22/11 19:53	
1,3-Dichlorobenzene	<1.50	20	19.0	95	20.2	101	70-130	6	20	ug/L	05/22/11 19:53	
1,4-Dichlorobenzene	<1.50	20	17.9	90	19.2	96	70-130	7	20	ug/L	05/22/11 19:53	
Dichlorodifluoromethane	<2.00	20	16.3	82	17.0	85	9-134	4	27	ug/L	05/22/11 19:53	
1,1-Dichloroethane	<0.500	20	20.5	103	20.8	104	66-132	1	20	ug/L	05/22/11 19:53	
1,2-Dichloroethane	<0.500	20	20.5	103	20.1	101	70-130	2	20	ug/L	05/22/11 19:53	
1,1-Dichloroethene	<0.500	20	21.1	106	21.4	107	58-144	1	21	ug/L	05/22/11 19:53	
cis-1,2-Dichloroethene	<0.500	20	17.6	88	17.9	90	67-129	2	24	ug/L	05/22/11 19:53	
trans-1,2-dichloroethene	<0.500	20	19.6	98	20.0	100	63-137	2	21	ug/L	05/22/11 19:53	
1,2-Dichloropropane	<0.500	20	19.4	97	19.9	100	70-130	3	20	ug/L	05/22/11 19:53	
1,3-Dichloropropane	<1.00	20	20.2	101	21.1	106	70-130	4	20	ug/L	05/22/11 19:53	
2,2-Dichloropropane	<0.500	20	21.2	106	21.9	110	60-141	3	24	ug/L	05/22/11 19:53	
1,1-Dichloropropene	<1.00	20	19.7	99	20.5	103	64-135	4	20	ug/L	05/22/11 19:53	
cis-1,3-Dichloropropene	<1.00	20	20.3	102	20.7	104	70-130	2	20	ug/L	05/22/11 19:53	
trans-1,3-dichloropropene	<0.500	20	21.9	110	22.2	111	70-130	1	20	ug/L	05/22/11 19:53	
Ethylbenzene	<2.00	20	18.9	95	19.9	100	70-130	5	20	ug/L	05/22/11 19:53	
Hexachlorobutadiene	<5.00	20	19.1	96	20.6	103	54-145	8	22	ug/L	05/22/11 19:53	
2-Hexanone	<5.00	40	39.4	99	38.7	97	65-129	2	20	ug/L	05/22/11 19:53	
Isopropylbenzene	<2.50	20	21.6	108	22.8	114	70-130	5	20	ug/L	05/22/11 19:53	
Methylene Chloride	<3.00	20	18.3	92	18.6	93	61-127	2	20	ug/L	05/22/11 19:53	
Iodomethane (Methyl Iodide)	<2.00	20	20.3	102	22.0	110	68-128	8	22	ug/L	05/22/11 19:53	
4-Methyl-2-Pentanone	<5.00	40	41.1	103	41.0	103	67-131	0	21	ug/L	05/22/11 19:53	



QC Summary **416950**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

MB Sample Id: 603413-1-BLK

Matrix: Water

LCS Sample Id: 603413-1-BKS

Prep Method: SW5030C

Date Prep: 05/22/2011

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	19.4	97	19.5	98	70-130	1	21	ug/L	05/22/11 19:53	
Naphthalene	<5.00	20	19.8	99	22.3	112	64-133	12	27	ug/L	05/22/11 19:53	
n-Propylbenzene	<2.00	20	19.0	95	20.3	102	65-128	7	20	ug/L	05/22/11 19:53	
Styrene	<1.00	20	20.4	102	21.6	108	70-130	6	20	ug/L	05/22/11 19:53	
1,1,1,2-Tetrachloroethane	<0.500	20	20.1	101	21.0	105	70-130	4	20	ug/L	05/22/11 19:53	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.7	104	70-130	3	20	ug/L	05/22/11 19:53	
Tetrachloroethylene	<0.500	20	19.4	97	20.7	104	63-127	6	20	ug/L	05/22/11 19:53	
Toluene	<2.00	20	18.3	92	19.6	98	70-130	7	20	ug/L	05/22/11 19:53	
1,2,3-Trichlorobenzene	<5.00	20	19.1	96	21.1	106	66-131	10	27	ug/L	05/22/11 19:53	
1,2,4-Trichlorobenzene	<5.00	20	19.7	99	20.6	103	69-127	4	20	ug/L	05/22/11 19:53	
1,1,1-Trichloroethane	<0.500	20	20.3	102	20.8	104	62-133	2	20	ug/L	05/22/11 19:53	
1,1,2-Trichloroethane	<0.500	20	19.6	98	19.7	99	70-130	1	20	ug/L	05/22/11 19:53	
Trichloroethene	<0.500	20	19.3	97	20.1	101	70-130	4	20	ug/L	05/22/11 19:53	
Trichlorofluoromethane	<2.00	20	21.1	106	22.1	111	45-151	5	22	ug/L	05/22/11 19:53	
1,2,3-Trichloropropane	<1.00	20	20.0	100	20.5	103	70-130	2	20	ug/L	05/22/11 19:53	
1,2,4-Trimethylbenzene	<2.00	20	19.0	95	20.4	102	70-130	7	20	ug/L	05/22/11 19:53	
1,3,5-Trimethylbenzene	<1.50	20	18.8	94	20.0	100	70-130	6	20	ug/L	05/22/11 19:53	
o-Xylene	<1.00	20	19.5	98	20.5	103	70-130	5	20	ug/L	05/22/11 19:53	
m,p-Xylenes	<2.00	40	39.8	100	41.6	104	70-130	4	20	ug/L	05/22/11 19:53	
Vinyl Acetate	<5.00	20	20.6	103	20.2	101	52-142	2	22	ug/L	05/22/11 19:53	
Vinyl Chloride	<0.500	20	18.7	94	18.6	93	43-120	1	25	ug/L	05/22/11 19:53	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<2000	4000	2380	60	2370	59	35-160	0	20	ug/L	05/22/11 21:01	
Benzene	699	2000	2580	94	2680	99	69-130	4	20	ug/L	05/22/11 21:01	
Bromobenzene	<150	2000	1860	93	1930	97	70-130	4	20	ug/L	05/22/11 21:01	
Bromochloromethane	<50.0	2000	1980	99	2040	102	63-119	3	22	ug/L	05/22/11 21:01	
Bromodichloromethane	<50.0	2000	2120	106	2160	108	70-130	2	20	ug/L	05/22/11 21:01	
Bromoform	<100	2000	2110	106	2160	108	57-121	2	20	ug/L	05/22/11 21:01	
Bromomethane	<500	2000	2140	107	2280	114	53-141	6	22	ug/L	05/22/11 21:01	
2-Butanone	<500	4000	3520	88	3360	84	46-136	5	22	ug/L	05/22/11 21:01	
n-Butylbenzene	<250	2000	1920	96	1980	99	65-127	3	20	ug/L	05/22/11 21:01	
Sec-Butylbenzene	<150	2000	1890	95	1980	99	70-130	5	20	ug/L	05/22/11 21:01	
tert-Butylbenzene	<250	2000	1900	95	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Carbon Disulfide	<50.0	2000	2120	106	2220	111	58-145	5	28	ug/L	05/22/11 21:01	
Carbon Tetrachloride	<50.0	2000	2020	101	2160	108	60-152	7	20	ug/L	05/22/11 21:01	
Chlorobenzene	<50.0	2000	1860	93	1960	98	70-130	5	20	ug/L	05/22/11 21:01	
Chloroethane	<400	2000	1720	86	1830	92	59-153	6	20	ug/L	05/22/11 21:01	
Chloroform	<50.0	2000	1880	94	1950	98	65-123	4	22	ug/L	05/22/11 21:01	
Chloromethane	<500	2000	1810	91	1830	92	47-148	1	22	ug/L	05/22/11 21:01	
2-Chlorotoluene	<150	2000	1880	94	1960	98	70-130	4	20	ug/L	05/22/11 21:01	
4-Chlorotoluene	<200	2000	1880	94	1990	100	70-130	6	20	ug/L	05/22/11 21:01	
4-Isopropyltoluene	<150	2000	1990	100	2100	105	70-130	5	20	ug/L	05/22/11 21:01	
Dibromochloromethane	<50.0	2000	2080	104	2140	107	70-130	3	20	ug/L	05/22/11 21:01	
1,2-Dibromo-3-Chloropropane	<200	2000	2060	103	2120	106	50-117	3	22	ug/L	05/22/11 21:01	
1,2-Dibromoethane	<50.0	2000	2010	101	2060	103	67-117	2	20	ug/L	05/22/11 21:01	
Dibromomethane	<50.0	2000	2030	102	2000	100	66-115	1	20	ug/L	05/22/11 21:01	
1,2-Dichlorobenzene	<150	2000	1980	99	2010	101	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichlorobenzene	<150	2000	1940	97	2020	101	70-130	4	20	ug/L	05/22/11 21:01	
1,4-Dichlorobenzene	<150	2000	1860	93	1950	98	70-130	5	20	ug/L	05/22/11 21:01	
Dichlorodifluoromethane	<200	2000	1530	77	1580	79	16-151	3	33	ug/L	05/22/11 21:01	
1,1-Dichloroethane	<50.0	2000	1970	99	2040	102	66-129	3	20	ug/L	05/22/11 21:01	
1,2-Dichloroethane	<50.0	2000	1930	97	1970	99	64-126	2	20	ug/L	05/22/11 21:01	
1,1-Dichloroethene	<50.0	2000	1970	99	2070	104	65-152	5	20	ug/L	05/22/11 21:01	
cis-1,2-Dichloroethene	<50.0	2000	1760	88	1830	92	66-126	4	20	ug/L	05/22/11 21:01	
trans-1,2-dichloroethene	<50.0	2000	1890	95	1950	98	66-135	3	20	ug/L	05/22/11 21:01	
1,2-Dichloropropane	<50.0	2000	1950	98	1980	99	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichloropropane	<100	2000	1990	100	2060	103	67-115	3	20	ug/L	05/22/11 21:01	
2,2-Dichloropropane	<50.0	2000	2020	101	2130	107	62-145	5	20	ug/L	05/22/11 21:01	
1,1-Dichloropropene	<100	2000	1920	96	2000	100	72-140	4	20	ug/L	05/22/11 21:01	
cis-1,3-Dichloropropene	<100	2000	2020	101	2090	105	67-122	3	20	ug/L	05/22/11 21:01	
trans-1,3-dichloropropene	<50.0	2000	2180	109	2200	110	70-130	1	20	ug/L	05/22/11 21:01	
Ethylbenzene	271	2000	2170	95	2240	98	70-130	3	20	ug/L	05/22/11 21:01	
Hexachlorobutadiene	<500	2000	1900	95	1950	98	68-143	3	20	ug/L	05/22/11 21:01	
2-Hexanone	<500	4000	3540	89	3470	87	52-122	2	33	ug/L	05/22/11 21:01	
Isopropylbenzene	<250	2000	2150	108	2270	114	70-130	5	20	ug/L	05/22/11 21:01	
Methylene Chloride	<300	2000	1750	88	1800	90	59-121	3	20	ug/L	05/22/11 21:01	
Iodomethane (Methyl Iodide)	<200	2000	2120	106	2210	111	66-127	4	20	ug/L	05/22/11 21:01	
4-Methyl-2-Pentanone	<500	4000	4020	101	4050	101	53-125	1	20	ug/L	05/22/11 21:01	



QC Summary **416950**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<200	2000	1970	99	2020	101	65-127	3	20	ug/L	05/22/11 21:01	
Naphthalene	<500	2000	2270	114	2350	118	54-129	3	26	ug/L	05/22/11 21:01	
n-Propylbenzene	<200	2000	1960	98	2040	102	69-126	4	20	ug/L	05/22/11 21:01	
Styrene	<100	2000	2110	106	2210	111	49-142	5	37	ug/L	05/22/11 21:01	
1,1,1,2-Tetrachloroethane	<50.0	2000	2030	102	2100	105	70-130	3	20	ug/L	05/22/11 21:01	
1,1,2,2-Tetrachloroethane	<50.0	2000	2090	105	2080	104	64-122	0	20	ug/L	05/22/11 21:01	
Tetrachloroethylene	<50.0	2000	1940	97	2010	101	69-130	4	20	ug/L	05/22/11 21:01	
Toluene	1090	2000	3010	96	3150	103	70-130	5	20	ug/L	05/22/11 21:01	
1,2,3-Trichlorobenzene	<500	2000	1990	100	2070	104	61-126	4	24	ug/L	05/22/11 21:01	
1,2,4-Trichlorobenzene	<500	2000	1950	98	2090	105	64-123	7	20	ug/L	05/22/11 21:01	
1,1,1-Trichloroethane	<50.0	2000	1930	97	2030	102	68-136	5	20	ug/L	05/22/11 21:01	
1,1,2-Trichloroethane	<50.0	2000	1930	97	1930	97	65-112	0	20	ug/L	05/22/11 21:01	
Trichloroethene	<50.0	2000	1910	96	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Trichlorofluoromethane	<200	2000	2030	102	2110	106	53-171	4	20	ug/L	05/22/11 21:01	
1,2,3-Trichloropropane	<100	2000	2040	102	2050	103	58-116	0	20	ug/L	05/22/11 21:01	
1,2,4-Trimethylbenzene	455	2000	2410	98	2480	101	67-128	3	22	ug/L	05/22/11 21:01	
1,3,5-Trimethylbenzene	<150	2000	2070	104	2130	107	70-130	3	20	ug/L	05/22/11 21:01	
o-Xylene	646	2000	2620	99	2730	104	70-130	4	20	ug/L	05/22/11 21:01	
m,p-Xylenes	1330	4000	5270	99	5610	107	70-130	6	20	ug/L	05/22/11 21:01	
Vinyl Acetate	<500	2000	1960	98	2010	101	43-133	3	23	ug/L	05/22/11 21:01	
Vinyl Chloride	<50.0	2000	1790	90	1830	92	46-132	2	21	ug/L	05/22/11 21:01	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.4	76	34.3	86	55-165	12	28	ug/L	05/21/11 19:09	
Benzene	<0.500	20	21.1	106	21.7	109	70-130	3	20	ug/L	05/21/11 19:09	
Bromobenzene	<1.50	20	17.4	87	18.3	92	70-130	5	20	ug/L	05/21/11 19:09	
Bromochloromethane	<0.500	20	22.9	115	23.4	117	67-125	2	24	ug/L	05/21/11 19:09	
Bromodichloromethane	<0.500	20	22.8	114	23.1	116	70-130	1	20	ug/L	05/21/11 19:09	
Bromoform	<1.00	20	20.8	104	20.9	105	69-130	0	20	ug/L	05/21/11 19:09	
Bromomethane	<5.00	20	26.1	131	26.4	132	58-138	1	25	ug/L	05/21/11 19:09	
2-Butanone	<5.00	40	40.9	102	42.1	105	58-146	3	27	ug/L	05/21/11 19:09	
n-Butylbenzene	<2.50	20	17.6	88	18.7	94	58-128	6	20	ug/L	05/21/11 19:09	
Sec-Butylbenzene	<1.50	20	17.7	89	18.8	94	61-133	6	20	ug/L	05/21/11 19:09	
tert-Butylbenzene	<2.50	20	18.5	93	19.2	96	65-128	4	20	ug/L	05/21/11 19:09	
Carbon Disulfide	<0.500	20	25.0	125	25.9	130	59-138	4	22	ug/L	05/21/11 19:09	
Carbon Tetrachloride	<0.500	20	22.2	111	23.0	115	57-140	4	21	ug/L	05/21/11 19:09	
Chlorobenzene	<0.500	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
Chloroethane	<4.00	20	20.0	100	21.5	108	60-146	7	24	ug/L	05/21/11 19:09	
Chloroform	<0.500	20	21.5	108	22.5	113	66-128	5	24	ug/L	05/21/11 19:09	
Chloromethane	<5.00	20	20.5	103	21.1	106	47-144	3	26	ug/L	05/21/11 19:09	
2-Chlorotoluene	<1.50	20	17.2	86	18.3	92	70-130	6	20	ug/L	05/21/11 19:09	
4-Chlorotoluene	<2.00	20	17.6	88	18.6	93	70-130	6	28	ug/L	05/21/11 19:09	
4-Isopropyltoluene	<1.50	20	18.6	93	19.7	99	67-135	6	20	ug/L	05/21/11 19:09	
Dibromochloromethane	<0.500	20	20.9	105	20.8	104	70-130	0	20	ug/L	05/21/11 19:09	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.1	101	20.6	103	60-128	2	21	ug/L	05/21/11 19:09	
1,2-Dibromoethane	<0.500	20	20.0	100	20.1	101	70-130	0	20	ug/L	05/21/11 19:09	
Dibromomethane	<0.500	20	21.7	109	22.0	110	70-130	1	23	ug/L	05/21/11 19:09	
1,2-Dichlorobenzene	<1.50	20	18.3	92	19.0	95	70-130	4	20	ug/L	05/21/11 19:09	
1,3-Dichlorobenzene	<1.50	20	18.3	92	19.4	97	70-130	6	20	ug/L	05/21/11 19:09	
1,4-Dichlorobenzene	<1.50	20	17.2	86	18.1	91	70-130	5	20	ug/L	05/21/11 19:09	
Dichlorodifluoromethane	<2.00	20	19.9	100	20.7	104	9-134	4	27	ug/L	05/21/11 19:09	
1,1-Dichloroethane	<0.500	20	22.7	114	23.3	117	66-132	3	20	ug/L	05/21/11 19:09	
1,2-Dichloroethane	<0.500	20	22.4	112	22.7	114	70-130	1	20	ug/L	05/21/11 19:09	
1,1-Dichloroethene	<0.500	20	22.8	114	23.9	120	58-144	5	21	ug/L	05/21/11 19:09	
cis-1,2-Dichloroethene	<0.500	20	20.1	101	21.4	107	67-129	6	24	ug/L	05/21/11 19:09	
trans-1,2-dichloroethene	<0.500	20	21.6	108	22.6	113	63-137	5	21	ug/L	05/21/11 19:09	
1,2-Dichloropropane	<0.500	20	20.9	105	21.5	108	70-130	3	20	ug/L	05/21/11 19:09	
1,3-Dichloropropane	<1.00	20	20.0	100	20.3	102	70-130	1	20	ug/L	05/21/11 19:09	
2,2-Dichloropropane	<0.500	20	23.5	118	24.2	121	60-141	3	24	ug/L	05/21/11 19:09	
1,1-Dichloropropene	<1.00	20	20.9	105	22.2	111	64-135	6	20	ug/L	05/21/11 19:09	
cis-1,3-Dichloropropene	<1.00	20	22.1	111	22.5	113	70-130	2	20	ug/L	05/21/11 19:09	
trans-1,3-dichloropropene	<0.500	20	21.4	107	21.9	110	70-130	2	20	ug/L	05/21/11 19:09	
Ethylbenzene	<2.00	20	18.9	95	19.6	98	70-130	4	20	ug/L	05/21/11 19:09	
Hexachlorobutadiene	<5.00	20	17.8	89	18.6	93	54-145	4	22	ug/L	05/21/11 19:09	
2-Hexanone	<5.00	40	35.4	89	35.6	89	65-129	1	20	ug/L	05/21/11 19:09	
Isopropylbenzene	<2.50	20	21.2	106	22.0	110	70-130	4	20	ug/L	05/21/11 19:09	
Methylene Chloride	<3.00	20	20.2	101	21.1	106	61-127	4	20	ug/L	05/21/11 19:09	
Iodomethane (Methyl Iodide)	<2.00	20	23.8	119	25.6	128	68-128	7	22	ug/L	05/21/11 19:09	
4-Methyl-2-Pentanone	<5.00	40	44.2	111	43.3	108	67-131	2	21	ug/L	05/21/11 19:09	



QC Summary **416950**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	22.2	111	22.6	113	70-130	2	21	ug/L	05/21/11 19:09	
Naphthalene	<5.00	20	19.9	100	20.6	103	64-133	3	27	ug/L	05/21/11 19:09	
n-Propylbenzene	<2.00	20	17.8	89	18.8	94	65-128	5	20	ug/L	05/21/11 19:09	
Styrene	<1.00	20	20.6	103	21.2	106	70-130	3	20	ug/L	05/21/11 19:09	
1,1,1,2-Tetrachloroethane	<0.500	20	20.2	101	20.8	104	70-130	3	20	ug/L	05/21/11 19:09	
1,1,2,2-Tetrachloroethane	<0.500	20	19.8	99	19.9	100	70-130	1	20	ug/L	05/21/11 19:09	
Tetrachloroethylene	<0.500	20	19.8	99	20.5	103	63-127	3	20	ug/L	05/21/11 19:09	
Toluene	<2.00	20	18.7	94	19.1	96	70-130	2	20	ug/L	05/21/11 19:09	
1,2,3-Trichlorobenzene	<5.00	20	18.7	94	19.8	99	66-131	6	27	ug/L	05/21/11 19:09	
1,2,4-Trichlorobenzene	<5.00	20	18.8	94	20.1	101	69-127	7	20	ug/L	05/21/11 19:09	
1,1,1-Trichloroethane	<0.500	20	22.4	112	23.3	117	62-133	4	20	ug/L	05/21/11 19:09	
1,1,2-Trichloroethane	<0.500	20	18.9	95	19.4	97	70-130	3	20	ug/L	05/21/11 19:09	
Trichloroethene	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/21/11 19:09	
Trichlorofluoromethane	<2.00	20	23.6	118	24.4	122	45-151	3	22	ug/L	05/21/11 19:09	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.8	99	70-130	1	20	ug/L	05/21/11 19:09	
1,2,4-Trimethylbenzene	<2.00	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
1,3,5-Trimethylbenzene	<1.50	20	17.6	88	18.7	94	70-130	6	20	ug/L	05/21/11 19:09	
o-Xylene	<1.00	20	19.4	97	19.8	99	70-130	2	20	ug/L	05/21/11 19:09	
m,p-Xylenes	<2.00	40	39.2	98	40.4	101	70-130	3	20	ug/L	05/21/11 19:09	
Vinyl Acetate	<5.00	20	20.0	100	20.1	101	52-142	0	22	ug/L	05/21/11 19:09	
Vinyl Chloride	<0.500	20	20.9	105	22.1	111	43-120	6	25	ug/L	05/21/11 19:09	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.9	77	28.6	72	35-160	8	20	ug/L	05/21/11 23:19	
Benzene	<0.500	20	20.0	100	19.9	100	69-130	1	20	ug/L	05/21/11 23:19	
Bromobenzene	<1.50	20	16.3	82	16.4	82	70-130	1	20	ug/L	05/21/11 23:19	
Bromochloromethane	<0.500	20	20.6	103	21.3	107	63-119	3	22	ug/L	05/21/11 23:19	
Bromodichloromethane	<0.500	20	21.6	108	21.6	108	70-130	0	20	ug/L	05/21/11 23:19	
Bromoform	<1.00	20	18.9	95	19.4	97	57-121	3	20	ug/L	05/21/11 23:19	
Bromomethane	<5.00	20	24.6	123	24.1	121	53-141	2	22	ug/L	05/21/11 23:19	
2-Butanone	<5.00	40	43.3	108	42.5	106	46-136	2	22	ug/L	05/21/11 23:19	
n-Butylbenzene	<2.50	20	16.8	84	16.9	85	65-127	1	20	ug/L	05/21/11 23:19	
Sec-Butylbenzene	<1.50	20	17.6	88	17.6	88	70-130	0	20	ug/L	05/21/11 23:19	
tert-Butylbenzene	<2.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Carbon Disulfide	<0.500	20	23.8	119	24.8	124	58-145	4	28	ug/L	05/21/11 23:19	
Carbon Tetrachloride	<0.500	20	22.0	110	21.7	109	60-152	1	20	ug/L	05/21/11 23:19	
Chlorobenzene	<0.500	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
Chloroethane	<4.00	20	19.5	98	19.7	99	59-153	1	20	ug/L	05/21/11 23:19	
Chloroform	<0.500	20	21.1	106	21.1	106	65-123	0	22	ug/L	05/21/11 23:19	
Chloromethane	<5.00	20	21.9	110	21.7	109	47-148	1	22	ug/L	05/21/11 23:19	
2-Chlorotoluene	<1.50	20	16.8	84	16.5	83	70-130	2	20	ug/L	05/21/11 23:19	
4-Chlorotoluene	<2.00	20	16.9	85	16.8	84	70-130	1	20	ug/L	05/21/11 23:19	
4-Isopropyltoluene	<1.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Dibromochloromethane	<0.500	20	19.3	97	19.1	96	70-130	1	20	ug/L	05/21/11 23:19	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.6	103	50-117	3	22	ug/L	05/21/11 23:19	
1,2-Dibromoethane	<0.500	20	18.9	95	18.8	94	67-117	1	20	ug/L	05/21/11 23:19	
Dibromomethane	<0.500	20	21.0	105	20.7	104	66-115	1	20	ug/L	05/21/11 23:19	
1,2-Dichlorobenzene	<1.50	20	17.4	87	17.4	87	70-130	0	20	ug/L	05/21/11 23:19	
1,3-Dichlorobenzene	<1.50	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
1,4-Dichlorobenzene	<1.50	20	16.5	83	16.2	81	70-130	2	20	ug/L	05/21/11 23:19	
Dichlorodifluoromethane	<2.00	20	18.9	95	19.8	99	16-151	5	33	ug/L	05/21/11 23:19	
1,1-Dichloroethane	<0.500	20	21.7	109	22.0	110	66-129	1	20	ug/L	05/21/11 23:19	
1,2-Dichloroethane	<0.500	20	21.4	107	21.6	108	64-126	1	20	ug/L	05/21/11 23:19	
1,1-Dichloroethene	<0.500	20	22.7	114	23.1	116	65-152	2	20	ug/L	05/21/11 23:19	
cis-1,2-Dichloroethene	<0.500	20	19.3	97	19.6	98	66-126	2	20	ug/L	05/21/11 23:19	
trans-1,2-dichloroethene	<0.500	20	21.4	107	21.5	108	66-135	0	20	ug/L	05/21/11 23:19	
1,2-Dichloropropane	<0.500	20	20.2	101	19.8	99	70-130	2	20	ug/L	05/21/11 23:19	
1,3-Dichloropropane	<1.00	20	19.1	96	18.7	94	67-115	2	20	ug/L	05/21/11 23:19	
2,2-Dichloropropane	<0.500	20	21.2	106	21.4	107	62-145	1	20	ug/L	05/21/11 23:19	
1,1-Dichloropropene	<1.00	20	20.2	101	20.3	102	72-140	0	20	ug/L	05/21/11 23:19	
cis-1,3-Dichloropropene	<1.00	20	20.1	101	20.4	102	67-122	1	20	ug/L	05/21/11 23:19	
trans-1,3-dichloropropene	<0.500	20	20.1	101	20.0	100	70-130	0	20	ug/L	05/21/11 23:19	
Ethylbenzene	<2.00	20	17.7	89	17.7	89	70-130	0	20	ug/L	05/21/11 23:19	
Hexachlorobutadiene	<5.00	20	16.0	80	16.7	84	68-143	4	20	ug/L	05/21/11 23:19	
2-Hexanone	<5.00	40	43.1	108	42.2	106	52-122	2	33	ug/L	05/21/11 23:19	
Isopropylbenzene	<2.50	20	20.2	101	20.3	102	70-130	0	20	ug/L	05/21/11 23:19	
Methylene Chloride	<3.00	20	18.8	94	19.6	98	59-121	4	20	ug/L	05/21/11 23:19	
Iodomethane (Methyl Iodide)	<2.00	20	21.3	107	22.9	115	66-127	7	20	ug/L	05/21/11 23:19	
4-Methyl-2-Pentanone	<5.00	40	53.0	133	51.7	129	53-125	2	20	ug/L	05/21/11 23:19	M1



QC Summary **416950**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	21.3	107	21.5	108	65-127	1	20	ug/L	05/21/11 23:19	
Naphthalene	<5.00	20	19.4	97	20.6	103	54-129	6	26	ug/L	05/21/11 23:19	
n-Propylbenzene	<2.00	20	17.7	89	17.4	87	69-126	2	20	ug/L	05/21/11 23:19	
Styrene	<1.00	20	5.07	25	5.20	26	49-142	3	37	ug/L	05/21/11 23:19	M2
1,1,1,2-Tetrachloroethane	<0.500	20	19.0	95	18.3	92	70-130	4	20	ug/L	05/21/11 23:19	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.2	101	64-122	0	20	ug/L	05/21/11 23:19	
Tetrachloroethylene	<0.500	20	17.5	88	17.9	90	69-130	2	20	ug/L	05/21/11 23:19	
Toluene	<2.00	20	17.5	88	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
1,2,3-Trichlorobenzene	<5.00	20	16.9	85	17.8	89	61-126	5	24	ug/L	05/21/11 23:19	
1,2,4-Trichlorobenzene	<5.00	20	17.0	85	17.3	87	64-123	2	20	ug/L	05/21/11 23:19	
1,1,1-Trichloroethane	<0.500	20	22.1	111	22.5	113	68-136	2	20	ug/L	05/21/11 23:19	
1,1,2-Trichloroethane	<0.500	20	18.2	91	17.7	89	65-112	3	20	ug/L	05/21/11 23:19	
Trichloroethene	<0.500	20	20.1	101	19.9	100	70-130	1	20	ug/L	05/21/11 23:19	
Trichlorofluoromethane	<2.00	20	22.9	115	23.8	119	53-171	4	20	ug/L	05/21/11 23:19	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.7	99	58-116	0	20	ug/L	05/21/11 23:19	
1,2,4-Trimethylbenzene	<2.00	20	17.4	87	17.1	86	67-128	2	22	ug/L	05/21/11 23:19	
1,3,5-Trimethylbenzene	<1.50	20	17.2	86	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
o-Xylene	<1.00	20	18.1	91	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
m,p-Xylenes	<2.00	40	37.2	93	36.4	91	70-130	2	20	ug/L	05/21/11 23:19	
Vinyl Acetate	<5.00	20	11.4	57	11.9	60	43-133	4	23	ug/L	05/21/11 23:19	
Vinyl Chloride	<0.500	20	21.7	109	21.2	106	46-132	2	21	ug/L	05/21/11 23:19	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Matrix: Solid

Prep Method: SW5035A

Date Prep: 05/17/2011

MB Sample Id: 603743-1-BLK

LCS Sample Id: 603743-1-BKS

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.50	2	2.27	114	2.24	112	52-140	1	23	mg/kg	05/24/11 21:05	
Benzene	<0.0500	1	0.937	94	0.942	94	70-130	1	20	mg/kg	05/24/11 21:05	
Bromobenzene	<0.250	1	0.989	99	1.00	100	70-130	1	20	mg/kg	05/24/11 21:05	
Bromochloromethane	<0.0500	1	0.988	99	0.988	99	70-130	0	20	mg/kg	05/24/11 21:05	
Bromodichloromethane	<0.0500	1	1.18	118	1.16	116	70-130	2	20	mg/kg	05/24/11 21:05	
Bromoform	<0.100	1	1.06	106	1.02	102	64-120	4	20	mg/kg	05/24/11 21:05	
Bromomethane	<0.500	1	1.37	137	1.45	145	21-168	6	56	mg/kg	05/24/11 21:05	
2-Butanone	<0.500	2	1.71	86	1.79	90	70-133	5	23	mg/kg	05/24/11 21:05	
tert-Butylbenzene	<0.250	1	1.09	109	1.09	109	70-130	0	20	mg/kg	05/24/11 21:05	
Sec-Butylbenzene	<0.250	1	1.06	106	1.05	105	70-130	1	20	mg/kg	05/24/11 21:05	
n-Butylbenzene	<0.250	1	1.01	101	1.06	106	70-130	5	20	mg/kg	05/24/11 21:05	
Carbon Disulfide	<0.500	1	0.853	85	0.851	85	43-164	0	38	mg/kg	05/24/11 21:05	
Carbon Tetrachloride	<0.0500	1	1.23	123	1.18	118	70-130	4	20	mg/kg	05/24/11 21:05	
Chlorobenzene	<0.0500	1	1.01	101	0.994	99	70-130	2	20	mg/kg	05/24/11 21:05	
Chloroethane	<0.500	1	0.945	95	1.02	102	35-156	8	48	mg/kg	05/24/11 21:05	
Chloroform	<0.0500	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
Chloromethane	<0.500	1	0.609	61	0.601	60	36-153	1	41	mg/kg	05/24/11 21:05	
2-Chlorotoluene	<0.250	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
4-Chlorotoluene	<0.250	1	1.11	111	1.14	114	70-130	3	20	mg/kg	05/24/11 21:05	
p-Cymene (p-Isopropyltoluene)	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,2-Dibromo-3-Chloropropane	<0.500	1	0.902	90	0.951	95	64-114	5	20	mg/kg	05/24/11 21:05	
Dibromochloromethane	<0.0500	1	1.07	107	1.06	106	70-130	1	20	mg/kg	05/24/11 21:05	
1,2-Dibromoethane	<0.500	1	0.998	100	0.976	98	70-130	2	20	mg/kg	05/24/11 21:05	
Dibromomethane	<0.250	1	1.02	102	1.06	106	70-130	4	20	mg/kg	05/24/11 21:05	
1,2-Dichlorobenzene	<0.0500	1	0.981	98	1.04	104	70-130	6	20	mg/kg	05/24/11 21:05	
1,3-Dichlorobenzene	<0.0500	1	1.02	102	1.01	101	70-130	1	20	mg/kg	05/24/11 21:05	
1,4-Dichlorobenzene	<0.0500	1	1.00	100	1.08	108	70-130	8	20	mg/kg	05/24/11 21:05	
Dichlorodifluoromethane	<0.500	1	0.489	49	0.458	46	12-169	7	49	mg/kg	05/24/11 21:05	
1,2-Dichloroethane	<0.0500	1	1.20	120	1.22	122	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethane	<0.0500	1	1.09	109	1.11	111	70-130	2	20	mg/kg	05/24/11 21:05	
trans-1,2-dichloroethene	<0.0500	1	1.02	102	0.981	98	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,2-Dichloroethene	<0.0500	1	0.962	96	0.970	97	70-130	1	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethene	<0.100	1	1.04	104	1.04	104	59-126	0	21	mg/kg	05/24/11 21:05	
2,2-Dichloropropane	<0.250	1	1.33	133	1.30	130	64-123	2	20	mg/kg	05/24/11 21:05	L1
1,3-Dichloropropane	<0.250	1	1.06	106	1.04	104	70-130	2	20	mg/kg	05/24/11 21:05	
1,2-Dichloropropane	<0.0500	1	0.976	98	0.972	97	70-130	0	20	mg/kg	05/24/11 21:05	
trans-1,3-dichloropropene	<0.0500	1	1.20	120	1.18	118	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloropropene	<0.250	1	1.04	104	1.00	100	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,3-Dichloropropene	<0.0500	1	1.07	107	1.05	105	70-130	2	20	mg/kg	05/24/11 21:05	
Ethylbenzene	<0.100	1	1.08	108	1.05	105	70-130	3	20	mg/kg	05/24/11 21:05	
Hexachlorobutadiene	<0.500	1	1.21	121	1.24	124	70-130	2	20	mg/kg	05/24/11 21:05	
2-Hexanone	<0.500	2	1.87	94	1.95	98	70-130	4	20	mg/kg	05/24/11 21:05	
Iodomethane (Methyl Iodide)	<0.500	1	0.963	96	1.00	100	53-157	4	31	mg/kg	05/24/11 21:05	
Isopropylbenzene	<0.250	1	1.12	112	1.12	112	70-130	0	20	mg/kg	05/24/11 21:05	
Naphthalene	<0.250	1	0.935	94	1.01	101	70-130	8	20	mg/kg	05/24/11 21:05	
Methylene Chloride	<0.500	1	0.901	90	0.917	92	70-130	2	20	mg/kg	05/24/11 21:05	



QC Summary **416950**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

MB Sample Id: 603743-1-BLK

Matrix: Solid

LCS Sample Id: 603743-1-BKS

Prep Method: SW5035A

Date Prep: 05/17/2011

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.500	2	1.97	99	2.00	100	70-130	2	20	mg/kg	05/24/11 21:05	
MTBE	<0.250	1	1.05	105	1.04	104	70-130	1	20	mg/kg	05/24/11 21:05	
n-Propylbenzene	<0.250	1	1.07	107	1.09	109	70-130	2	20	mg/kg	05/24/11 21:05	
Styrene	<0.250	1	1.04	104	1.01	101	70-130	3	20	mg/kg	05/24/11 21:05	
1,1,1,2-Tetrachloroethane	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,1,2,2-Tetrachloroethane	<0.100	1	0.922	92	0.923	92	70-130	0	20	mg/kg	05/24/11 21:05	
Tetrachloroethylene	<0.0500	1	1.01	101	0.972	97	70-130	4	20	mg/kg	05/24/11 21:05	
Toluene	<0.100	1	0.942	94	0.921	92	70-130	2	20	mg/kg	05/24/11 21:05	
1,2,4-Trichlorobenzene	<0.250	1	1.06	106	1.11	111	70-130	5	20	mg/kg	05/24/11 21:05	
1,2,3-Trichlorobenzene	<0.250	1	1.03	103	1.09	109	70-130	6	20	mg/kg	05/24/11 21:05	
1,1,2-Trichloroethane	<0.0500	1	0.961	96	0.952	95	70-130	1	20	mg/kg	05/24/11 21:05	
1,1,1-Trichloroethane	<0.0500	1	1.18	118	1.18	118	70-130	0	20	mg/kg	05/24/11 21:05	
Trichloroethene	<0.0500	1	1.01	101	1.05	105	70-130	4	20	mg/kg	05/24/11 21:05	
Trichlorofluoromethane	<0.500	1	1.10	110	1.10	110	54-136	0	34	mg/kg	05/24/11 21:05	V1
1,2,3-Trichloropropane	<0.250	1	1.07	107	1.08	108	70-130	1	20	mg/kg	05/24/11 21:05	
1,2,4-Trimethylbenzene	<0.250	1	1.09	109	1.12	112	70-130	3	20	mg/kg	05/24/11 21:05	
1,3,5-Trimethylbenzene	<0.250	1	1.10	110	1.12	112	70-130	2	20	mg/kg	05/24/11 21:05	
Vinyl Acetate	<0.500	1	0.904	90	0.913	91	22-183	1	20	mg/kg	05/24/11 21:05	
Vinyl Chloride	<0.500	1	0.846	85	0.814	81	38-154	4	20	mg/kg	05/24/11 21:05	
o-Xylene	<0.0500	1	1.02	102	0.989	99	70-130	3	20	mg/kg	05/24/11 21:05	
m,p-Xylenes	<0.100	2	2.00	100	1.98	99	70-130	1	20	mg/kg	05/24/11 21:05	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Matrix: Soil

Prep Method: SW5035A

Date Prep: 05/19/2011

Parent Sample Id: 417239-003

MS Sample Id: 417239-003 S

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.60	2.13	<1.60	0	<1.52	0	49-140	NC	35	mg/kg	05/25/11 21:23	M2
Benzene	2.35	1.07	3.87	142	4.01	163	63-115	4	22	mg/kg	05/25/11 21:23	M1
Bromobenzene	<0.267	1.07	0.861	80	0.790	77	57-123	9	25	mg/kg	05/25/11 21:23	
Bromochloromethane	<0.0533	1.07	0.882	82	0.815	80	52-126	8	32	mg/kg	05/25/11 21:23	
Bromodichloromethane	<0.0533	1.07	1.05	98	1.01	99	57-120	4	22	mg/kg	05/25/11 21:23	
Bromoform	<0.107	1.07	0.861	80	0.729	71	53-120	17	24	mg/kg	05/25/11 21:23	
Bromomethane	<0.533	2.13	2.82	132	3.54	174	25-190	23	54	mg/kg	05/25/11 21:23	
2-Butanone	<0.533	2.13	0.902	42	0.754	37	57-137	18	44	mg/kg	05/25/11 21:23	M2
tert-Butylbenzene	<0.267	1.07	3.59	336	4.24	416	49-133	17	28	mg/kg	05/25/11 21:23	M1
Sec-Butylbenzene	0.529	1.07	1.60	100	1.76	121	47-137	10	29	mg/kg	05/25/11 21:23	
n-Butylbenzene	1.34	1.07	2.52	110	3.02	165	35-134	18	30	mg/kg	05/25/11 21:23	M1
Carbon Disulfide	<0.533	2.13	0.795	37	0.721	36	26-156	10	40	mg/kg	05/25/11 21:23	
Carbon Tetrachloride	<0.0533	1.07	0.967	90	0.905	89	47-127	7	26	mg/kg	05/25/11 21:23	
Chlorobenzene	<0.0533	1.07	0.852	80	0.786	77	63-116	8	22	mg/kg	05/25/11 21:23	
Chloroethane	<0.533	2.13	0.835	39	0.743	37	32-145	12	51	mg/kg	05/25/11 21:23	
Chloroform	<0.0533	1.07	1.04	97	0.899	88	51-124	15	34	mg/kg	05/25/11 21:23	
Chloromethane	<0.533	2.13	<0.533	0	<0.508	0	28-142	NC	48	mg/kg	05/25/11 21:23	M2
2-Chlorotoluene	<0.267	1.07	1.45	136	1.32	129	62-119	9	26	mg/kg	05/25/11 21:23	M1
4-Chlorotoluene	<0.267	1.07	1.01	94	0.930	91	65-116	8	24	mg/kg	05/25/11 21:23	
p-Cymene (p-Isopropyltoluene)	<0.267	1.07	1.20	112	1.28	125	44-138	6	28	mg/kg	05/25/11 21:23	
1,2-Dibromo-3-Chloropropane	<0.533	1.07	0.830	78	0.663	65	55-116	22	25	mg/kg	05/25/11 21:23	
Dibromochloromethane	<0.0533	1.07	0.881	82	0.797	78	56-121	10	24	mg/kg	05/25/11 21:23	
1,2-Dibromoethane	<0.533	1.07	0.783	73	0.698	68	58-115	11	22	mg/kg	05/25/11 21:23	
Dibromomethane	<0.267	1.07	0.849	79	0.789	77	59-117	7	23	mg/kg	05/25/11 21:23	
1,2-Dichlorobenzene	<0.0533	1.07	0.898	84	0.814	80	62-117	10	23	mg/kg	05/25/11 21:23	
1,3-Dichlorobenzene	<0.0533	1.07	0.889	83	0.854	84	61-118	4	24	mg/kg	05/25/11 21:23	
1,4-Dichlorobenzene	<0.0533	1.07	0.947	89	0.845	83	64-118	11	23	mg/kg	05/25/11 21:23	
Dichlorodifluoromethane	<0.533	2.13	<0.533	0	<0.508	0	25-143	NC	62	mg/kg	05/25/11 21:23	M2
1,2-Dichloroethane	0.0746	1.07	1.08	94	0.990	90	56-122	9	22	mg/kg	05/25/11 21:23	
1,1-Dichloroethane	<0.0533	1.07	0.973	91	0.818	80	50-126	17	36	mg/kg	05/25/11 21:23	
trans-1,2-dichloroethene	<0.0533	1.07	0.851	80	0.707	69	49-127	18	38	mg/kg	05/25/11 21:23	
cis-1,2-Dichloroethene	<0.0533	1.07	0.852	80	0.721	71	46-129	17	37	mg/kg	05/25/11 21:23	
1,1-Dichloroethene	<0.107	1.07	0.828	77	0.719	70	36-131	14	55	mg/kg	05/25/11 21:23	
2,2-Dichloropropane	<0.267	1.07	1.07	100	0.969	95	41-133	10	32	mg/kg	05/25/11 21:23	
1,3-Dichloropropane	<0.267	1.07	0.869	81	0.788	77	55-117	10	24	mg/kg	05/25/11 21:23	
1,2-Dichloropropane	<0.0533	1.07	0.832	78	0.825	81	64-112	1	21	mg/kg	05/25/11 21:23	
trans-1,3-dichloropropene	<0.0533	1.07	0.957	89	0.856	84	59-127	11	22	mg/kg	05/25/11 21:23	
1,1-Dichloropropene	<0.267	1.07	0.828	77	0.776	76	57-119	6	26	mg/kg	05/25/11 21:23	
cis-1,3-Dichloropropene	<0.0533	1.07	0.851	80	0.802	79	66-115	6	22	mg/kg	05/25/11 21:23	
Ethylbenzene	14.3	1.07	17.3	280	20.3	588	59-117	16	27	mg/kg	05/25/11 21:23	M3
Hexachlorobutadiene	<0.533	1.07	1.05	98	0.954	94	41-148	10	26	mg/kg	05/25/11 21:23	
2-Hexanone	<0.533	2.13	2.46	115	4.02	198	60-128	48	25	mg/kg	05/25/11 21:23	M1R2
Iodomethane (Methyl Iodide)	<0.533	2.13	0.842	40	0.721	36	41-151	15	57	mg/kg	05/25/11 21:23	M2
Isopropylbenzene	1.38	1.07	2.60	114	3.05	164	58-139	16	29	mg/kg	05/25/11 21:23	M1
Naphthalene	3.38	1.07	4.93	145	5.64	222	37-138	13	26	mg/kg	05/25/11 21:23	M3
Methylene Chloride	<0.533	1.07	0.813	76	0.776	76	48-123	5	37	mg/kg	05/25/11 21:23	



City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Parent Sample Id: 417239-003

Matrix: Soil

MS Sample Id: 417239-003 S

Prep Method: SW5035A

Date Prep: 05/19/2011

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.533	2.13	2.79	131	0.932	46	67-129	100	25	mg/kg	05/25/11 21:23	M1M2R
MTBE	2.93	2.13	4.39	69	3.84	45	62-125	13	24	mg/kg	05/25/11 21:23	M2
n-Propylbenzene	4.53	1.07	6.50	184	8.42	381	51-129	26	29	mg/kg	05/25/11 21:23	M3
Styrene	<0.267	1.07	1.22	114	1.26	124	57-123	3	23	mg/kg	05/25/11 21:23	M1
1,1,1,2-Tetrachloroethane	<0.267	1.07	0.869	81	0.772	76	59-115	12	23	mg/kg	05/25/11 21:23	
1,1,2,2-Tetrachloroethane	<0.107	1.07	0.866	81	0.670	66	45-133	26	29	mg/kg	05/25/11 21:23	
Tetrachloroethylene	<0.0533	1.07	0.835	78	0.751	74	40-125	11	26	mg/kg	05/25/11 21:23	
Toluene	5.74	1.07	7.72	185	8.84	304	50-125	14	28	mg/kg	05/25/11 21:23	M3
1,2,4-Trichlorobenzene	<0.267	1.07	0.916	86	0.823	81	31-136	11	27	mg/kg	05/25/11 21:23	
1,2,3-Trichlorobenzene	<0.267	1.07	0.880	82	0.774	76	29-135	13	33	mg/kg	05/25/11 21:23	
1,1,2-Trichloroethane	<0.0533	1.07	1.23	115	1.23	121	53-117	0	24	mg/kg	05/25/11 21:23	M1
1,1,1-Trichloroethane	<0.0533	1.07	0.985	92	0.888	87	47-125	10	31	mg/kg	05/25/11 21:23	
Trichloroethene	<0.0533	1.07	0.898	84	0.858	84	51-130	5	24	mg/kg	05/25/11 21:23	
Trichlorofluoromethane	<0.533	2.13	0.764	36	0.620	31	36-133	21	45	mg/kg	05/25/11 21:23	M2V1
1,2,3-Trichloropropane	<0.267	1.07	0.886	83	0.786	77	56-120	12	25	mg/kg	05/25/11 21:23	
1,2,4-Trimethylbenzene	17.9	1.07	22.1	393	27.2	912	49-129	21	38	mg/kg	05/25/11 21:23	M3
1,3,5-Trimethylbenzene	5.62	1.07	7.13	141	9.97	426	44-137	33	38	mg/kg	05/25/11 21:23	M3
Vinyl Acetate	<0.533	2.13	<0.533	0	<0.508	0	25-170	NC	50	mg/kg	05/25/11 21:23	M2
Vinyl Chloride	<0.533	2.13	0.567	27	<0.508	0	25-144	200	47	mg/kg	05/25/11 21:23	M2R2
o-Xylene	14.7	1.07	17.9	299	22.2	735	52-127	21	29	mg/kg	05/25/11 21:23	M3
m,p-Xylenes	16.8	2.13	21.1	202	25.7	438	51-126	20	29	mg/kg	05/25/11 21:23	M3



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858061

MB Sample Id: 603702-1-BLK

Matrix: Solid

LCS Sample Id: 603702-1-BKS

Prep Method: SW3545

Date Prep: 05/25/2011

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.330	2	1.67	84	1.80	90	56-106	7	20	mg/kg	05/27/11 12:29	N1
Acenaphthylene	<0.330	2	1.78	89	1.88	94	60-97	5	20	mg/kg	05/27/11 12:29	N1
Anthracene	<0.330	2	1.82	91	1.91	96	55-96	5	24	mg/kg	05/27/11 12:29	N1
Azobenzene	<0.330	2	1.95	98	2.07	104	59-106	6	20	mg/kg	05/27/11 12:29	N1
Benzo(a)anthracene	<0.330	2	1.93	97	2.01	101	65-97	4	20	mg/kg	05/27/11 12:29	N1L1
Benzo(a)pyrene	<0.330	2	1.84	92	1.91	96	64-106	4	20	mg/kg	05/27/11 12:29	N1
Benzo(b)fluoranthene	<0.330	2	1.93	97	2.06	103	59-110	7	23	mg/kg	05/27/11 12:29	N1
Benzo(g,h,i)perylene	<0.330	2	1.88	94	1.96	98	55-120	4	20	mg/kg	05/27/11 12:29	N1
Benzo(k)fluoranthene	<0.330	2	2.01	101	1.98	99	60-116	2	20	mg/kg	05/27/11 12:29	N1
Benzoic Acid	<2.00	4	2.73	69	2.67	67	24-89	2	31	mg/kg	05/27/11 12:29	N1
Benzyl Alcohol	<0.330	2	1.57	79	1.77	89	59-96	12	20	mg/kg	05/27/11 12:29	N1
Benzyl Butyl Phthalate	<0.330	2	2.13	107	2.18	109	63-104	2	20	mg/kg	05/27/11 12:29	L1N1
bis(2-chloroethoxy) methane	<0.330	2	1.59	80	1.79	90	62-95	12	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroethyl) ether	<0.330	2	1.43	72	1.65	83	60-94	14	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroisopropyl) ether	<0.330	2	1.62	81	1.83	92	55-107	12	22	mg/kg	05/27/11 12:29	N1
bis(2-ethylhexyl) phthalate	<0.330	2	2.11	106	2.16	108	61-116	2	20	mg/kg	05/27/11 12:29	N1
4-Bromophenyl-phenylether	<0.330	2	1.65	83	1.71	86	72-119	4	25	mg/kg	05/27/11 12:29	N1
di-n-Butyl Phthalate	<0.330	2	1.88	94	1.98	99	64-111	5	25	mg/kg	05/27/11 12:29	N1
4-chloro-3-methylphenol	<0.330	4	3.24	81	3.40	85	53-110	5	20	mg/kg	05/27/11 12:29	N1
4-Chloroaniline	<1.00	2	1.73	87	1.92	96	33-197	10	20	mg/kg	05/27/11 12:29	N1
2-Chloronaphthalene	<0.330	2	1.62	81	1.76	88	60-93	8	20	mg/kg	05/27/11 12:29	N1
2-Chlorophenol	<0.330	4	2.93	73	3.25	81	55-99	10	20	mg/kg	05/27/11 12:29	N1
4-Chlorophenyl Phenyl Ether	<0.330	2	1.65	83	1.70	85	68-103	3	20	mg/kg	05/27/11 12:29	N1
Chrysene	<0.330	2	1.86	93	1.94	97	64-99	4	20	mg/kg	05/27/11 12:29	N1
Dibenz(a,h)Anthracene	<0.330	2	1.87	94	1.93	97	57-117	3	20	mg/kg	05/27/11 12:29	N1
Dibenzofuran	<0.330	2	1.68	84	1.75	88	62-95	4	20	mg/kg	05/27/11 12:29	N1
1,2-Dichlorobenzene	<0.330	2	1.51	76	1.68	84	58-88	11	20	mg/kg	05/27/11 12:29	N1
1,3-Dichlorobenzene	<0.330	2	1.52	76	1.67	84	58-90	9	20	mg/kg	05/27/11 12:29	N1
1,4-Dichlorobenzene	<0.330	2	1.48	74	1.65	83	59-91	11	20	mg/kg	05/27/11 12:29	N1
3,3-Dichlorobenzidine	<1.70	2	2.08	104	2.22	111	48-159	7	29	mg/kg	05/27/11 12:29	N1
2,4-Dichlorophenol	<0.500	4	2.87	72	3.25	81	53-102	12	20	mg/kg	05/27/11 12:29	N1
Diethyl Phthalate	<0.330	2	1.83	92	1.90	95	66-108	4	20	mg/kg	05/27/11 12:29	N1
Dimethyl Phthalate	<0.330	2	1.79	90	1.89	95	65-103	5	20	mg/kg	05/27/11 12:29	N1
2,4-Dimethylphenol	<0.330	4	2.92	73	3.17	79	52-91	8	20	mg/kg	05/27/11 12:29	N1
4,6-dinitro-2-methyl phenol	<2.00	4	4.02	101	4.23	106	50-119	5	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrophenol	<2.00	4	4.36	109	4.54	114	24-130	4	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrotoluene	<0.330	2	1.83	92	1.91	96	63-99	4	20	mg/kg	05/27/11 12:29	N1
2,6-Dinitrotoluene	<0.330	2	1.81	91	1.92	96	62-97	6	20	mg/kg	05/27/11 12:29	N1
Fluoranthene	<0.330	2	1.82	91	1.90	95	58-99	4	25	mg/kg	05/27/11 12:29	N1
Fluorene	<0.330	2	1.80	90	1.87	94	63-96	4	20	mg/kg	05/27/11 12:29	N1
Hexachlorobenzene	<0.330	2	1.64	82	1.76	88	61-99	7	25	mg/kg	05/27/11 12:29	N1
Hexachlorobutadiene	<0.330	2	1.43	72	1.65	83	52-91	14	20	mg/kg	05/27/11 12:29	N1
Hexachlorocyclopentadiene	<1.00	2	1.43	72	1.63	82	43-110	6	20	mg/kg	05/27/11 12:29	N1
Hexachloroethane	<0.330	2	1.49	75	1.65	83	57-95	10	20	mg/kg	05/27/11 12:29	N1
Indeno(1,2,3-c,d)Pyrene	<0.330	2	1.95	98	2.02	101	60-117	4	20	mg/kg	05/27/11 12:29	N1
Isophorone	<0.330	2	2.02	101	2.19	110	53-90	8	20	mg/kg	05/27/11 12:29	L1N1



City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858061

MB Sample Id: 603702-1-BLK

Matrix: Solid

LCS Sample Id: 603702-1-BKS

Prep Method: SW3545

Date Prep: 05/25/2011

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.330	2	1.58	79	1.73	87	59-94	9	20	mg/kg	05/27/11 12:29	N1
2-methylphenol	<0.330	4	2.95	74	3.33	83	52-101	12	20	mg/kg	05/27/11 12:29	N1
3&4-Methylphenol	<0.500	4	2.78	70	3.10	78	55-107	11	20	mg/kg	05/27/11 12:29	N1
Naphthalene	<0.330	2	1.55	78	1.73	87	60-92	11	20	mg/kg	05/27/11 12:29	N1
Nitrobenzene	<0.330	2	1.59	80	1.74	87	59-100	9	20	mg/kg	05/27/11 12:29	N1
2-Nitrophenol	<0.330	4	2.99	75	3.30	83	52-99	10	20	mg/kg	05/27/11 12:29	N1
4-Nitrophenol	<2.00	4	3.76	94	3.86	97	51-121	3	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodi-n-Propylamine	<0.330	2	1.78	89	1.96	98	55-121	10	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodiphenylamine	<0.330	2	2.41	121	2.55	128	17-149	6	53	mg/kg	05/27/11 12:29	N1
di-n-Octyl Phthalate	<0.330	2	2.10	105	2.16	108	62-123	3	22	mg/kg	05/27/11 12:29	N1
Pentachlorophenol	<0.670	4	3.33	83	3.46	87	52-90	4	23	mg/kg	05/27/11 12:29	N1
Phenanthrene	<0.330	2	1.77	89	1.88	94	62-100	6	24	mg/kg	05/27/11 12:29	N1
Phenol	<0.330	4	2.84	71	3.28	82	54-101	14	20	mg/kg	05/27/11 12:29	N1
Pyrene	<0.330	2	2.00	100	2.03	102	65-99	1	20	mg/kg	05/27/11 12:29	L1N1
1,2,4-Trichlorobenzene	<0.500	2	1.59	80	1.78	89	58-96	11	20	mg/kg	05/27/11 12:29	N1
2,4,6-Trichlorophenol	<1.00	4	2.92	73	3.13	78	56-101	7	20	mg/kg	05/27/11 12:29	N1



Chain of Custody

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Work Order No: 416 950

Page 1 of 1

Project Manager: **Pete Schwarz** Bill to: (if different) **Richard Byrd**

Company Name: **QRA** Company Name: **City of Tucson Env. Services**

Address: **1670 E. River Rd.** Address: **1001 S. Rut Ave. Bldg. 2**

City, State ZIP: **Tucson, AZ. 85718** City, State ZIP: **PO Box 7710, Tucson, AZ. 85716**

Phone: **520-623-9221** Email: **pschwarz@cravworld.com**

Project Name: **HQ057 Site**

Project Number: **055672.010**

P.O. Number:

Sampler's Name: **Meredith Smith**

SAMPLE RECEIPT

Temperature (°C): **8.2** Temp Blank Present:

Received Intact: Yes No N/A Wet Ice / Blue Ice

Cooler Custody Seals: Yes No N/A Total Containers: **17**

Sample Custody Seals: Yes No N/A

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	Number of Containers	Volatile Organics	Semi-Volatile Organics	Organochlorine Pesticides	Oil & Grease (1664-HEM)	Metals (See Below)	Metals (See Below)	Total Cyanide	BOD	pH	Cond.	Alk	TDS	TSS	NO2	NO3 (300.0)	NO2+NO3 (353.2)	TKN	NH3	COD	Total-P	Colliert	E. Coli (CFU/MPN)	HPC	Fecal (CFU/MPN)	
GW-051811-MES-12	GW	5/18/11	0720	01	2	8260B <input checked="" type="checkbox"/> 624 <input type="checkbox"/> 524.2 <input type="checkbox"/>	8270C <input checked="" type="checkbox"/> 625 <input type="checkbox"/>	8081A <input type="checkbox"/> 608 <input type="checkbox"/>		Total <input type="checkbox"/> Hardness <input type="checkbox"/> Ca Hardness <input type="checkbox"/>	Total <input type="checkbox"/> TCLP <input type="checkbox"/>	Total Hexavalent Cr <input type="checkbox"/>	Total Cyanide <input type="checkbox"/>																	
S-051811-MES-13	Soil		1050	02	2	8260B <input type="checkbox"/> 624 <input type="checkbox"/>																								
S-051811-MES-14	Soil		1100	03	2																									
S-051811-MES-15	Soil		1110	04	2																									
S-051811-MES-16	Soil		1120	05	2																									
GW-051811-MES-17	GW		1300	06	5																									
Top Blank				07	1																									

ANALYSIS REQUEST (PLEASE CHECK METHOD NUMBER)

Circle Method(s) and Metal(s) to be analyzed: **200.7/6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag TI U Other: 245.1/7470A: Hg**

Circle Method(s) and Metal(s) to be analyzed: **200.8/6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1/7470A: Hg**

Dissolved / TCLP 200.7/6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SIO2 Na TI Sn V Zn

Circle Method(s) and Metal(s) to be analyzed: 200.8/6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1/7470A: Hg

Relinquished by: (Signature) *[Signature]* Received by: (Signature) *[Signature]* Date/Time: **5/18/11 1538**

Relinquished by: (Signature) *[Signature]* Received by: (Signature) *[Signature]* Date/Time: **5/20/11 1345**

Relinquished by: (Signature) *[Signature]* Received by: (Signature) *[Signature]* Date/Time: **5/20/11 1345**

Upon signing this COC, you accept Xenco terms and conditions unless otherwise agreed upon in writing. Reports are intellectual property of Xenco until paid. Samples will be held 30 days after the final report is emailed unless hereby requested. Rush charges and collection fees are pre-approved if necessary.

C.O.C. Serial # **19687**



Sample Receipt Checklist

phx 5/20/11 1345

Client Name CRA/cgt

Date and Time Received: 5/18/11 1535

Work Order Number: 416950

Checked by: RDS

Checklist completed by: Robert SHANK Date: 5/18/11

Logged In by: lm Date: 5/20/11

Matrix: Solid Courier Name: Client Xenco

Reviewed by: _____ Date: _____

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	phx 4.6
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Metal 2.6
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	vials 8.2
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Temp: _____
Samples received same day of collection?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Wet Ice Present <input checked="" type="checkbox"/>
Where was the temperature reading taken at?	Sample <input checked="" type="checkbox"/>	Temp Blank <input type="checkbox"/>	Other: _____
VOA Water – VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Water – Microbiological bottles have ≤ 2.5 cm headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Water – All sample pH's acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> Checked by: _____

If No, list all samples and bottle types that are not acceptable in Additional Comments section. Also state any correction actions.

Sulfide Water – Bottles have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> (zero headspace ≤ than neck of bottle)
Dissolved Water Analytes – Field Filtered?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>

Are samples received deemed acceptable? Yes No If No then complete section below

PC Notified	Date: _____	Init: _____	PC Init: _____
Client Notified	Date: _____	Init: _____	L/M <input type="checkbox"/> Date: _____ L/M <input type="checkbox"/> Date: _____
Contact Name: _____	Action to take:	Analyze <input type="checkbox"/>	Cancel <input type="checkbox"/> Hold <input type="checkbox"/> Other: _____
Changes/Comments made on original COC?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____
Changes made in LIMS?	Yes <input type="checkbox"/>	N/A <input type="checkbox"/>	Init: _____ Date: _____

Additional Comments: _____

Analytical Report 417239

for
City of Tucson / Environmental Services

Project Manager: Richard Byrd

HQUST Site

055672.040

17-JUN-11

Collected By: Client



Celebrating 20 Years of commitment to excellence in Environmental Testing Services

3725 E. Atlanta Ave, Phoenix, AZ 85040

Ph: (602) 437-0330

Xenco-Houston (EPA Lab code: TX00122):

Texas (T104704215-10-6-TX), Arizona (AZ0738), Arkansas (08-039-0), Connecticut (PH-0102), Florida (E871002)
Illinois (002082), Indiana (C-TX-02), Iowa (392), Kansas (E-10380), Kentucky (45), Louisiana (03054)
New Hampshire (297408), New Jersey (TX007), New York (11763), Oklahoma (9218), Pennsylvania (68-03610)
Rhode Island (LAO00312), USDA (S-44102)

Xenco-Atlanta (EPA Lab Code: GA00046):

Florida (E87429), North Carolina (483), South Carolina (98015), Utah (AALI1), West Virginia (362), Kentucky (85)
Louisiana (04176), USDA (P330-07-00105)

Xenco-Miami (EPA Lab code: FL01152): Florida (E86678), Maryland (330)

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Xenco-Boca Raton (EPA Lab Code: FL01273):

Florida(E86240),South Carolina(96031001), Louisiana(04154), Georgia(917)
North Carolina(444), Texas(T104704468-TX), Illinois(002295), Florida(E86349)

Xenco Phoenix (EPA Lab Code: AZ00901):

Arizona(AZ0757), Texas(104704435-10-2), Nevada(NAC-445A), DoD(65816)

Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

Xenco Tucson (EPA Lab code:AZ000989): Arizona (AZ0758)

17-JUN-11

Project Manager: **Richard Byrd**
City of Tucson / Environmental Services
P.O. Box 27210
Tucson, AZ 85726

Reference: XENCO Report No: **417239**
HQUST Site
Project Address:

Richard Byrd:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 417239. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 417239 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



Skip Harden

Project Manager

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CASE NARRATIVE

Client Name: City of Tucson / Environmental Services

Project Name: HQUST Site

Project ID: 055672.040
Work Order Number: 417239

Report Date: 17-JUN-11
Date Received: 05/19/2011

Sample receipt non conformances and comments:

None

Sample receipt non conformances and comments per sample:

None

Analytical non nonformances and comments:

Batch: LBA-857319 Volatiles by SW 8260B

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-857697 Volatiles by SW 8260B

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Batch: LBA-858061 SVOCs by SW 8270C

N1:

The MS/MSD pair was not analyzed due to the parent sample required a dilution. The dilution was high enough that it would have diluted out the spikes added.

Batch: LBA-858409 SVOCs by SW 8270C

R2:

The RPD for the target analyte was above acceptance criteria in the MS/MSD pair. Since the RPD was within criteria in the LCS/LCSD pair, no further action was required.

Arizona Flags

All method blanks, laboratory spikes, and/or matrix spikes met quality control objectives for the parameters associated with this Work Order except as detailed below or on the Data Qualifier page of this report. Data Qualifiers used in this report are in accordance with ADEQ Arizona Data Qualifiers, Revision 3.0 9/20/2007. Data qualifiers (flags) contained within this analytical report have been issued to explain a quality control deficiency, and do not affect the quality (validity) of the data unless noted otherwise in the case narrative.

- D1 Sample required dilution due to matrix.
- D2 Sample required dilution due to high concentration of target analyte.
- L1 The associated blank spike recovery was above laboratory acceptance limits.
- M1 Matrix spike recovery was high; the associated blank spike recovery was acceptable.
- M2 Matrix spike recovery was low; the associated blank spike recovery was acceptable.
- M3 The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to spike level. The associated blank spike recovery was acceptable.
- N1 See case narrative.
- R2 RPD/RSD exceeded the laboratory acceptance limit. See case narrative.
- R5 MS/MSD RPD exceeded the laboratory acceptance limit. Recovery met acceptance criteria.
- S8 The analysis of the sample required a dilution such that the surrogate recovery calculation does not provide any useful information. The associated blank spike recovery was acceptable.
- T3 Method not promulgated either by EPA or ADHS
- V1 CCV recovery was above method acceptance limits. This target analyte was not detected in the sample.

Sample Cross Reference 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
Trip Blank	W	May-19-11 11:50		417239-001
S-051911-MES-18	S	May-19-11 08:00		417239-002
S-051911-MES-19	S	May-19-11 08:10		417239-003
S-051911-MES-20	S	May-19-11 08:20		417239-004
S-051911-MES-21	S	May-19-11 08:30		417239-005
S-051911-MES-22	S	May-19-11 08:45		417239-006
S-051911-MES-23	S	May-19-11 09:00		417239-007
GW-051911-MES-24	W	May-19-11 11:50		417239-008
S-051911-MES-25	S	May-19-11 14:45		417239-009
S-051911-MES-26	S	May-19-11 14:50		417239-010
S-051911-MES-27	S	May-19-11 14:55		417239-011
S-051911-MES-28	S	May-19-11 15:10		417239-012
S-051911-MES-29	S	May-19-11 15:20		417239-013



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-19-11 16:30
Lab Sample Id: 417239-001	Date Collected: May-19-11 11:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<20.0	20.0	ug/L	05/21/11 22:56		1
Benzene	71-43-2	<0.500	0.500	ug/L	05/21/11 22:56		1
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/21/11 22:56		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/21/11 22:56		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/21/11 22:56		1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/21/11 22:56		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/21/11 22:56		1
2-Butanone	78-93-3	<5.00	5.00	ug/L	05/21/11 22:56		1
n-Butylbenzene	104-51-8	<2.50	2.50	ug/L	05/21/11 22:56		1
Sec-Butylbenzene	135-98-8	<1.50	1.50	ug/L	05/21/11 22:56		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/21/11 22:56		1
Carbon Disulfide	75-15-0	<0.500	0.500	ug/L	05/21/11 22:56		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/21/11 22:56		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/21/11 22:56		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/21/11 22:56		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/21/11 22:56		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/21/11 22:56		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/21/11 22:56		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/21/11 22:56		1
4-Isopropyltoluene	99-87-6	<1.50	1.50	ug/L	05/21/11 22:56		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/21/11 22:56		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/21/11 22:56		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/21/11 22:56		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/21/11 22:56		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/21/11 22:56		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/21/11 22:56		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/21/11 22:56		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/21/11 22:56		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/21/11 22:56		1
1,2-Dichloroethane	107-06-2	<0.500	0.500	ug/L	05/21/11 22:56		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/21/11 22:56		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/21/11 22:56		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/21/11 22:56		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/21/11 22:56		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/21/11 22:56		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/21/11 22:56		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/21/11 22:56		1
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/21/11 22:56		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/21/11 22:56		1
Ethylbenzene	100-41-4	<2.00	2.00	ug/L	05/21/11 22:56		1



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: Trip Blank	Matrix: Aqueous	Date Received: May-19-11 16:30
Lab Sample Id: 417239-001	Date Collected: May-19-11 11:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-21-11 16:15
Seq Number: 856979	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/21/11 22:56		1
2-Hexanone	591-78-6	<5.00	5.00	ug/L	05/21/11 22:56		1
Isopropylbenzene	98-82-8	<2.50	2.50	ug/L	05/21/11 22:56		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/21/11 22:56		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/21/11 22:56		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/21/11 22:56		1
MTBE	1634-04-4	<2.00	2.00	ug/L	05/21/11 22:56		1
Naphthalene	91-20-3	<5.00	5.00	ug/L	05/21/11 22:56		1
n-Propylbenzene	103-65-1	<2.00	2.00	ug/L	05/21/11 22:56		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/21/11 22:56		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/21/11 22:56		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/21/11 22:56		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/21/11 22:56		1
Toluene	108-88-3	<2.00	2.00	ug/L	05/21/11 22:56		1
Total Trihalomethane		<0.500	0.500	ug/L	05/21/11 22:56		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/21/11 22:56		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/21/11 22:56		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/21/11 22:56		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/21/11 22:56		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/21/11 22:56		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/21/11 22:56		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/21/11 22:56		1
1,2,4-Trimethylbenzene	95-63-6	<2.00	2.00	ug/L	05/21/11 22:56		1
1,3,5-Trimethylbenzene	108-67-8	<1.50	1.50	ug/L	05/21/11 22:56		1
o-Xylene	95-47-6	<1.00	1.00	ug/L	05/21/11 22:56		1
m,p-Xylenes	179601-23-1	<2.00	2.00	ug/L	05/21/11 22:56		1
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/21/11 22:56		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/21/11 22:56		1
Total Xylenes	1330-20-7	<1.00	1.00	ug/L	05/21/11 22:56		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	104	%	70-135	05/21/11 22:56	
Dibromofluoromethane	1868-53-7	109	%	69-133	05/21/11 22:56	
1,2-Dichloroethane-D4	17060-07-0	105	%	66-139	05/21/11 22:56	
Toluene-D8	2037-26-5	85	%	70-130	05/21/11 22:56	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-18	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-002	Date Collected: May-19-11 08:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.34	1.34	mg/kg	05/25/11 20:30		0.89
Benzene	71-43-2	1.23	0.0446	mg/kg	05/25/11 20:30		0.89
Bromobenzene	108-86-1	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
Bromochloromethane	74-97-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Bromodichloromethane	75-27-4	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Bromoform	75-25-2	<0.0891	0.0891	mg/kg	05/25/11 20:30		0.89
Bromomethane	74-83-9	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
2-Butanone	78-93-3	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
tert-Butylbenzene	98-06-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
Sec-Butylbenzene	135-98-8	0.336	0.223	mg/kg	05/25/11 20:30		0.89
n-Butylbenzene	104-51-8	0.676	0.223	mg/kg	05/25/11 20:30		0.89
Carbon Disulfide	75-15-0	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Carbon Tetrachloride	56-23-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Chlorobenzene	108-90-7	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Chloroethane	75-00-3	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Chloroform	67-66-3	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Chloromethane	74-87-3	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
2-Chlorotoluene	95-49-8	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
4-Chlorotoluene	106-43-4	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,2-Dibromo-3-Chloropropane	96-12-8	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Dibromochloromethane	124-48-1	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,2-Dibromoethane	106-93-4	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Dibromomethane	74-95-3	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,2-Dichlorobenzene	95-50-1	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,3-Dichlorobenzene	541-73-1	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,4-Dichlorobenzene	106-46-7	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Dichlorodifluoromethane	75-71-8	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
1,2-Dichloroethane	107-06-2	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,1-Dichloroethane	75-34-3	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
trans-1,2-dichloroethene	156-60-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
cis-1,2-Dichloroethene	156-59-2	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,1-Dichloroethene	75-35-4	<0.0891	0.0891	mg/kg	05/25/11 20:30		0.89
2,2-Dichloropropane	594-20-7	<0.223	0.223	mg/kg	05/25/11 20:30	L1	0.89
1,3-Dichloropropane	142-28-9	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,2-Dichloropropane	78-87-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
trans-1,3-dichloropropene	10061-02-6	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,1-Dichloropropene	563-58-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
cis-1,3-Dichloropropene	10061-01-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Ethylbenzene	100-41-4	1.79	0.0891	mg/kg	05/25/11 20:30		0.89



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-18	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-002	Date Collected: May-19-11 08:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
2-Hexanone	591-78-6	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Iodomethane (Methyl Iodide)	74-88-4	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Isopropylbenzene	98-82-8	0.302	0.223	mg/kg	05/25/11 20:30		0.89
Naphthalene	91-20-3	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
Methylene Chloride	75-09-2	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
4-Methyl-2-Pentanone	108-10-1	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
MTBE	1634-04-4	1.96	0.223	mg/kg	05/25/11 20:30		0.89
n-Propylbenzene	103-65-1	1.21	0.223	mg/kg	05/25/11 20:30		0.89
Styrene	100-42-5	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,1,1,2-Tetrachloroethane	630-20-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,1,2,2-Tetrachloroethane	79-34-5	<0.0891	0.0891	mg/kg	05/25/11 20:30		0.89
Tetrachloroethylene	127-18-4	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Toluene	108-88-3	<0.0891	0.0891	mg/kg	05/25/11 20:30		0.89
1,2,4-Trichlorobenzene	120-82-1	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,2,3-Trichlorobenzene	87-61-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,1,2-Trichloroethane	79-00-5	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
1,1,1-Trichloroethane	71-55-6	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Trichloroethene	79-01-6	<0.0446	0.0446	mg/kg	05/25/11 20:30		0.89
Trichlorofluoromethane	75-69-4	<0.446	0.446	mg/kg	05/25/11 20:30	V1	0.89
1,2,3-Trichloropropane	96-18-4	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,2,4-Trimethylbenzene	95-63-6	<0.223	0.223	mg/kg	05/25/11 20:30		0.89
1,3,5-Trimethylbenzene	108-67-8	0.379	0.223	mg/kg	05/25/11 20:30		0.89
Vinyl Acetate	108-05-4	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
Vinyl Chloride	75-01-4	<0.446	0.446	mg/kg	05/25/11 20:30		0.89
o-Xylene	95-47-6	0.0504	0.0446	mg/kg	05/25/11 20:30		0.89
m,p-Xylenes	179601-23-1	<0.0891	0.0891	mg/kg	05/25/11 20:30		0.89
Total Xylenes	1330-20-7	0.0504	0.0446	mg/kg	05/25/11 20:30		0.89

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	62-123	05/25/11 20:30	
Dibromofluoromethane	1868-53-7	91	%	52-140	05/25/11 20:30	
1,2-Dichloroethane-D4	17060-07-0	110	%	54-133	05/25/11 20:30	
Toluene-D8	2037-26-5	92	%	63-126	05/25/11 20:30	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-18	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-002	Date Collected: May-19-11 08:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 22:09		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 22:09		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 22:09	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 22:09		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 22:09		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 22:09	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 22:09		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 22:09		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 22:09		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 22:09		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 22:09		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 22:09		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 22:09		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 22:09		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 22:09		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 22:09		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 22:09		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 22:09		1



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-18	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-002	Date Collected: May-19-11 08:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 22:09		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 22:09		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 22:09		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 22:09	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 22:09		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 22:09		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 22:09		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 22:09		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 22:09		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 22:09		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 22:09		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 22:09		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 22:09		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 22:09		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 22:09		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 22:09	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 22:09		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 22:09		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	62	%	44-103	05/31/11 22:09	
2-Fluorophenol	367-12-4	51	%	15-111	05/31/11 22:09	
Nitrobenzene-d5	4165-60-0	49	%	45-109	05/31/11 22:09	
Phenol-d6	13127-88-3	57	%	37-105	05/31/11 22:09	
Terphenyl-D14	1718-51-0	75	%	41-118	05/31/11 22:09	
2,4,6-Tribromophenol	118-79-6	42	%	10-124	05/31/11 22:09	
2-Chlorophenol-D4	93951-73-6	55	%	24-110	05/31/11 22:09	
1,2-Dichlorobenzene-D4	2199-69-1	53	%	38-102	05/31/11 22:09	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-19	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-003	Date Collected: May-19-11 08:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:10
Seq Number: 857697	Basis: Wet Weight
Dilution Analysis:	
Seq#: 857697 Date Analyzed: 06/02/11 11:35 Date Prep: 05/19/11 08:10	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.46	1.46	mg/kg	05/25/11 20:57	M2	0.97
Benzene	71-43-2	2.35	0.0487	mg/kg	05/25/11 20:57	M1	0.97
Bromobenzene	108-86-1	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
Bromochloromethane	74-97-5	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Bromodichloromethane	75-27-4	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Bromoform	75-25-2	<0.0975	0.0975	mg/kg	05/25/11 20:57		0.97
Bromomethane	74-83-9	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
2-Butanone	78-93-3	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
tert-Butylbenzene	98-06-6	<0.244	0.244	mg/kg	05/25/11 20:57	M1	0.97
Sec-Butylbenzene	135-98-8	0.529	0.244	mg/kg	05/25/11 20:57		0.97
n-Butylbenzene	104-51-8	1.34	0.244	mg/kg	05/25/11 20:57	M1	0.97
Carbon Disulfide	75-15-0	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
Carbon Tetrachloride	56-23-5	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Chlorobenzene	108-90-7	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Chloroethane	75-00-3	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
Chloroform	67-66-3	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Chloromethane	74-87-3	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
2-Chlorotoluene	95-49-8	<0.244	0.244	mg/kg	05/25/11 20:57	M1	0.97
4-Chlorotoluene	106-43-4	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,2-Dibromo-3-Chloropropane	96-12-8	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
Dibromochloromethane	124-48-1	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
1,2-Dibromoethane	106-93-4	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
Dibromomethane	74-95-3	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,2-Dichlorobenzene	95-50-1	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
1,3-Dichlorobenzene	541-73-1	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
1,4-Dichlorobenzene	106-46-7	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Dichlorodifluoromethane	75-71-8	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
1,2-Dichloroethane	107-06-2	0.0746	0.0487	mg/kg	05/25/11 20:57		0.97
1,1-Dichloroethane	75-34-3	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
trans-1,2-dichloroethene	156-60-5	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
cis-1,2-Dichloroethene	156-59-2	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
1,1-Dichloroethene	75-35-4	<0.0975	0.0975	mg/kg	05/25/11 20:57		0.97
2,2-Dichloropropane	594-20-7	<0.244	0.244	mg/kg	05/25/11 20:57	L1	0.97
1,3-Dichloropropane	142-28-9	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,2-Dichloropropane	78-87-5	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
trans-1,3-dichloropropene	10061-02-6	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-19	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-003	Date Collected: May-19-11 08:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:10
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
1,1-Dichloropropene	563-58-6	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
cis-1,3-Dichloropropene	10061-01-5	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Ethylbenzene	100-41-4	15.5	0.975	mg/kg	06/02/11 11:35	D2M3	9.75
Hexachlorobutadiene	87-68-3	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
2-Hexanone	591-78-6	<0.487	0.487	mg/kg	05/25/11 20:57	M1	0.97
Iodomethane (Methyl Iodide)	74-88-4	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
Isopropylbenzene	98-82-8	1.38	0.244	mg/kg	05/25/11 20:57	M1	0.97
Naphthalene	91-20-3	3.38	0.244	mg/kg	05/25/11 20:57	M3	0.97
Methylene Chloride	75-09-2	<0.487	0.487	mg/kg	05/25/11 20:57		0.97
4-Methyl-2-Pentanone	108-10-1	<0.487	0.487	mg/kg	05/25/11 20:57	M1M2	0.97
MTBE	1634-04-4	2.93	0.244	mg/kg	05/25/11 20:57	M2	0.97
n-Propylbenzene	103-65-1	4.53	0.244	mg/kg	05/25/11 20:57	M3	0.97
Styrene	100-42-5	<0.244	0.244	mg/kg	05/25/11 20:57	M1	0.97
1,1,1,2-Tetrachloroethane	630-20-6	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,1,2,2-Tetrachloroethane	79-34-5	<0.0975	0.0975	mg/kg	05/25/11 20:57		0.97
Tetrachloroethylene	127-18-4	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Toluene	108-88-3	6.25	0.975	mg/kg	06/02/11 11:35	D2M3	9.75
1,2,4-Trichlorobenzene	120-82-1	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,2,3-Trichlorobenzene	87-61-6	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,1,2-Trichloroethane	79-00-5	<0.0487	0.0487	mg/kg	05/25/11 20:57	M1	0.97
1,1,1-Trichloroethane	71-55-6	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Trichloroethene	79-01-6	<0.0487	0.0487	mg/kg	05/25/11 20:57		0.97
Trichlorofluoromethane	75-69-4	<0.487	0.487	mg/kg	05/25/11 20:57	M2V1	0.97
1,2,3-Trichloropropane	96-18-4	<0.244	0.244	mg/kg	05/25/11 20:57		0.97
1,2,4-Trimethylbenzene	95-63-6	19.7	2.44	mg/kg	06/02/11 11:35	D2M3	9.75
1,3,5-Trimethylbenzene	108-67-8	6.13	2.44	mg/kg	06/02/11 11:35	D2M3	9.75
Vinyl Acetate	108-05-4	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
Vinyl Chloride	75-01-4	<0.487	0.487	mg/kg	05/25/11 20:57	M2	0.97
o-Xylene	95-47-6	15.2	0.487	mg/kg	06/02/11 11:35	D2M3	9.75
m,p-Xylenes	179601-23-1	17.8	0.975	mg/kg	06/02/11 11:35	D2M3	9.75
Total Xylenes	1330-20-7	33.0	0.487	mg/kg	06/02/11 11:35	D2	9.75

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	88	%	62-123	05/25/11 20:57	
Dibromofluoromethane	1868-53-7	84	%	52-140	05/25/11 20:57	
1,2-Dichloroethane-D4	17060-07-0	92	%	54-133	05/25/11 20:57	
Toluene-D8	2037-26-5	83	%	63-126	05/25/11 20:57	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-19	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-003	Date Collected: May-19-11 08:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Acenaphthylene	208-96-8	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Anthracene	120-12-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Azobenzene	103-33-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzo(a)anthracene	56-55-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1L1	10
Benzo(a)pyrene	50-32-8	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzo(b)fluoranthene	205-99-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzo(g,h,i)perylene	191-24-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzo(k)fluoranthene	207-08-9	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzoic Acid	65-85-0	<50.0	50.0	mg/kg	06/01/11 01:16	D1	10
Benzyl Alcohol	100-51-6	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Benzyl Butyl Phthalate	85-68-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1L1	10
bis(2-chloroethoxy) methane	111-91-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
bis(2-chloroethyl) ether	111-44-4	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
bis(2-chloroisopropyl) ether	108-60-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
bis(2-ethylhexyl) phthalate	117-81-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4-Bromophenyl-phenylether	101-55-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
di-n-Butyl Phthalate	84-74-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4-chloro-3-methylphenol	59-50-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4-Chloroaniline	106-47-8	<10.0	10.0	mg/kg	06/01/11 01:16	D1	10
2-Chloronaphthalene	91-58-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
2-Chlorophenol	95-57-8	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4-Chlorophenyl Phenyl Ether	7005-72-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Chrysene	218-01-9	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Dibenz(a,h)Anthracene	53-70-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Dibenzofuran	132-64-9	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
1,2-Dichlorobenzene	95-50-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
1,3-Dichlorobenzene	541-73-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
1,4-Dichlorobenzene	106-46-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
3,3-Dichlorobenzidine	91-94-1	<17.0	17.0	mg/kg	06/01/11 01:16	D1	10
2,4-Dichlorophenol	120-83-2	<5.00	5.00	mg/kg	06/01/11 01:16	D1	10
Diethyl Phthalate	84-66-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Dimethyl Phthalate	131-11-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
2,4-Dimethylphenol	105-67-9	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4,6-dinitro-2-methyl phenol	534-52-1	<20.0	20.0	mg/kg	06/01/11 01:16	D1	10
2,4-Dinitrophenol	51-28-5	<20.0	20.0	mg/kg	06/01/11 01:16	D1	10
2,4-Dinitrotoluene	121-14-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
2,6-Dinitrotoluene	606-20-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Fluoranthene	206-44-0	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Fluorene	86-73-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-19	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-003	Date Collected: May-19-11 08:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Hexachlorobutadiene	87-68-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Hexachlorocyclopentadiene	77-47-4	<20.0	20.0	mg/kg	06/01/11 01:16	D1	10
Hexachloroethane	67-72-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Indeno(1,2,3-c,d)Pyrene	193-39-5	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Isophorone	78-59-1	<3.30	3.30	mg/kg	06/01/11 01:16	D1L1	10
2-Methylnaphthalene	91-57-6	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
2-methylphenol	95-48-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
3&4-Methylphenol		<5.00	5.00	mg/kg	06/01/11 01:16	D1	10
Naphthalene	91-20-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Nitrobenzene	98-95-3	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
2-Nitrophenol	88-75-5	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
4-Nitrophenol	100-02-7	<20.0	20.0	mg/kg	06/01/11 01:16	D1	10
N-Nitrosodi-n-Propylamine	621-64-7	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
N-Nitrosodiphenylamine	86-30-6	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
di-n-Octyl Phthalate	117-84-0	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Pentachlorophenol	87-86-5	<6.70	6.70	mg/kg	06/01/11 01:16	D1	10
Phenanthrene	85-01-8	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Phenol	108-95-2	<3.30	3.30	mg/kg	06/01/11 01:16	D1	10
Pyrene	129-00-0	<3.30	3.30	mg/kg	06/01/11 01:16	D1L1	10
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	mg/kg	06/01/11 01:16	D1	10
2,4,6-Trichlorophenol	88-06-2	<10.0	10.0	mg/kg	06/01/11 01:16	D1	10

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	63	%	44-103	06/01/11 01:16	
2-Fluorophenol	367-12-4	55	%	15-111	06/01/11 01:16	
Nitrobenzene-d5	4165-60-0	52	%	45-109	06/01/11 01:16	
Phenol-d6	13127-88-3	60	%	37-105	06/01/11 01:16	
Terphenyl-D14	1718-51-0	72	%	41-118	06/01/11 01:16	
2,4,6-Tribromophenol	118-79-6	28	%	10-124	06/01/11 01:16	
2-Chlorophenol-D4	93951-73-6	57	%	24-110	06/01/11 01:16	
1,2-Dichlorobenzene-D4	2199-69-1	49	%	38-102	06/01/11 01:16	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-19	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-003	Date Collected: May-19-11 08:10	

Analytical Method: Metals, Total, by SW 6010B	Prep Method: SW3050B
Tech: JHO	% Moisture:
Analyst: MGR	Basis: Wet Weight
Seq Number: 857884	Date Prep: May-26-11 11:00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chromium	7440-47-3	13.9	5.00	mg/kg	05/26/11 16:57		1
Lead	7439-92-1	8.74	5.00	mg/kg	05/26/11 16:57		1
Magnesium	7439-95-4	15500	50.0	mg/kg	05/26/11 16:57		1
Manganese	7439-96-5	213	5.00	mg/kg	05/26/11 16:57		1

Analytical Method: Ferrous Iron by SM3500	% Moisture:
Tech: DAD	Basis: Wet Weight
Analyst: RLH	
Seq Number: 860063	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Water Soluble Ferrous Iron	IRON II	<1.00	1.00	mg/kg	06/14/11 10:00	T3	1

Analytical Method: Alkalinity by SM 2320B	% Moisture:
Tech: RLH	Basis: Wet Weight
Analyst: RLH	
Seq Number: 857369	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Water Soluble Alkalinity, Total (as CaCO3)		480	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Bicarbonate (as CaCO: ALKCACO3)		480	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Carbonate (as CaCO3) ALKCARB		<200	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Hydroxide (as CaCO3)		<200	200	mg/kg	05/24/11 15:00	T3D2	10



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-20	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-004	Date Collected: May-19-11 08:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.32	1.32	mg/kg	05/25/11 22:16		0.88
Benzene	71-43-2	3.75	0.0439	mg/kg	05/25/11 22:16		0.88
Bromobenzene	108-86-1	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Bromochloromethane	74-97-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Bromodichloromethane	75-27-4	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Bromoform	75-25-2	<0.0877	0.0877	mg/kg	05/25/11 22:16		0.88
Bromomethane	74-83-9	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
2-Butanone	78-93-3	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
tert-Butylbenzene	98-06-6	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Sec-Butylbenzene	135-98-8	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
n-Butylbenzene	104-51-8	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Carbon Disulfide	75-15-0	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Carbon Tetrachloride	56-23-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Chlorobenzene	108-90-7	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Chloroethane	75-00-3	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Chloroform	67-66-3	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Chloromethane	74-87-3	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
2-Chlorotoluene	95-49-8	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
4-Chlorotoluene	106-43-4	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,2-Dibromo-3-Chloropropane	96-12-8	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Dibromochloromethane	124-48-1	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,2-Dibromoethane	106-93-4	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Dibromomethane	74-95-3	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,2-Dichlorobenzene	95-50-1	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,3-Dichlorobenzene	541-73-1	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,4-Dichlorobenzene	106-46-7	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Dichlorodifluoromethane	75-71-8	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
1,2-Dichloroethane	107-06-2	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,1-Dichloroethane	75-34-3	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
trans-1,2-dichloroethene	156-60-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
cis-1,2-Dichloroethene	156-59-2	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,1-Dichloroethene	75-35-4	<0.0877	0.0877	mg/kg	05/25/11 22:16		0.88
2,2-Dichloropropane	594-20-7	<0.219	0.219	mg/kg	05/25/11 22:16	L1	0.88
1,3-Dichloropropane	142-28-9	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,2-Dichloropropane	78-87-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
trans-1,3-dichloropropene	10061-02-6	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,1-Dichloropropene	563-58-6	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
cis-1,3-Dichloropropene	10061-01-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Ethylbenzene	100-41-4	1.27	0.0877	mg/kg	05/25/11 22:16		0.88



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-20	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-004	Date Collected: May-19-11 08:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:20
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
2-Hexanone	591-78-6	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Iodomethane (Methyl Iodide)	74-88-4	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Naphthalene	91-20-3	0.437	0.219	mg/kg	05/25/11 22:16		0.88
Isopropylbenzene	98-82-8	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Methylene Chloride	75-09-2	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
4-Methyl-2-Pentanone	108-10-1	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
MTBE	1634-04-4	4.57	0.219	mg/kg	05/25/11 22:16		0.88
n-Propylbenzene	103-65-1	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Styrene	100-42-5	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,1,1,2-Tetrachloroethane	630-20-6	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,1,2,2-Tetrachloroethane	79-34-5	<0.0877	0.0877	mg/kg	05/25/11 22:16		0.88
Tetrachloroethylene	127-18-4	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Toluene	108-88-3	3.98	0.0877	mg/kg	05/25/11 22:16		0.88
1,2,4-Trichlorobenzene	120-82-1	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,2,3-Trichlorobenzene	87-61-6	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,1,2-Trichloroethane	79-00-5	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
1,1,1-Trichloroethane	71-55-6	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Trichloroethene	79-01-6	<0.0439	0.0439	mg/kg	05/25/11 22:16		0.88
Trichlorofluoromethane	75-69-4	<0.439	0.439	mg/kg	05/25/11 22:16	V1	0.88
1,2,3-Trichloropropane	96-18-4	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
1,2,4-Trimethylbenzene	95-63-6	0.616	0.219	mg/kg	05/25/11 22:16		0.88
1,3,5-Trimethylbenzene	108-67-8	<0.219	0.219	mg/kg	05/25/11 22:16		0.88
Vinyl Acetate	108-05-4	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
Vinyl Chloride	75-01-4	<0.439	0.439	mg/kg	05/25/11 22:16		0.88
o-Xylene	95-47-6	1.36	0.0439	mg/kg	05/25/11 22:16		0.88
m,p-Xylenes	179601-23-1	0.949	0.0877	mg/kg	05/25/11 22:16		0.88
Total Xylenes	1330-20-7	2.31	0.0439	mg/kg	05/25/11 22:16		0.88

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	88	%	62-123	05/25/11 22:16	
Dibromofluoromethane	1868-53-7	87	%	52-140	05/25/11 22:16	
1,2-Dichloroethane-D4	17060-07-0	96	%	54-133	05/25/11 22:16	
Toluene-D8	2037-26-5	89	%	63-126	05/25/11 22:16	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-20	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-004	Date Collected: May-19-11 08:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 22:56		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 22:56		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 22:56	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 22:56		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 22:56		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 22:56	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 22:56		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 22:56		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 22:56		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 22:56		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 22:56		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 22:56		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 22:56		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 22:56		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 22:56		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 22:56		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 22:56		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 22:56		1



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-20	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-004	Date Collected: May-19-11 08:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 22:56		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 22:56		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 22:56		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 22:56	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 22:56		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 22:56		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 22:56		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 22:56		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 22:56		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 22:56		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 22:56		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 22:56		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 22:56		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 22:56		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 22:56		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 22:56	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 22:56		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 22:56		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	69	%	44-103	05/31/11 22:56	
2-Fluorophenol	367-12-4	56	%	15-111	05/31/11 22:56	
Nitrobenzene-d5	4165-60-0	53	%	45-109	05/31/11 22:56	
Phenol-d6	13127-88-3	62	%	37-105	05/31/11 22:56	
Terphenyl-D14	1718-51-0	86	%	41-118	05/31/11 22:56	
2,4,6-Tribromophenol	118-79-6	59	%	10-124	05/31/11 22:56	
2-Chlorophenol-D4	93951-73-6	59	%	24-110	05/31/11 22:56	
1,2-Dichlorobenzene-D4	2199-69-1	56	%	38-102	05/31/11 22:56	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-21	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-005	Date Collected: May-19-11 08:30	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:30
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.42	1.42	mg/kg	05/25/11 22:43		0.95
Benzene	71-43-2	0.168	0.0473	mg/kg	05/25/11 22:43		0.95
Bromobenzene	108-86-1	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Bromochloromethane	74-97-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Bromodichloromethane	75-27-4	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Bromoform	75-25-2	<0.0947	0.0947	mg/kg	05/25/11 22:43		0.95
Bromomethane	74-83-9	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
2-Butanone	78-93-3	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
tert-Butylbenzene	98-06-6	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Sec-Butylbenzene	135-98-8	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
n-Butylbenzene	104-51-8	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Carbon Disulfide	75-15-0	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Carbon Tetrachloride	56-23-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Chlorobenzene	108-90-7	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Chloroethane	75-00-3	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Chloroform	67-66-3	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Chloromethane	74-87-3	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
2-Chlorotoluene	95-49-8	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
4-Chlorotoluene	106-43-4	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,2-Dibromo-3-Chloropropane	96-12-8	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Dibromochloromethane	124-48-1	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,2-Dibromoethane	106-93-4	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Dibromomethane	74-95-3	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,2-Dichlorobenzene	95-50-1	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,3-Dichlorobenzene	541-73-1	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,4-Dichlorobenzene	106-46-7	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Dichlorodifluoromethane	75-71-8	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
1,2-Dichloroethane	107-06-2	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,1-Dichloroethane	75-34-3	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
trans-1,2-dichloroethene	156-60-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
cis-1,2-Dichloroethene	156-59-2	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,1-Dichloroethene	75-35-4	<0.0947	0.0947	mg/kg	05/25/11 22:43		0.95
2,2-Dichloropropane	594-20-7	<0.237	0.237	mg/kg	05/25/11 22:43	L1	0.95
1,3-Dichloropropane	142-28-9	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,2-Dichloropropane	78-87-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
trans-1,3-dichloropropene	10061-02-6	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,1-Dichloropropene	563-58-6	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
cis-1,3-Dichloropropene	10061-01-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Ethylbenzene	100-41-4	0.268	0.0947	mg/kg	05/25/11 22:43		0.95



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City of Tucson / Environmental Services, Tucson, AZ HQUEST Site

Sample Id: S-051911-MES-21	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-005	Date Collected: May-19-11 08:30	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:30
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
2-Hexanone	591-78-6	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Iodomethane (Methyl Iodide)	74-88-4	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Naphthalene	91-20-3	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Isopropylbenzene	98-82-8	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Methylene Chloride	75-09-2	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
4-Methyl-2-Pentanone	108-10-1	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
MTBE	1634-04-4	0.799	0.237	mg/kg	05/25/11 22:43		0.95
n-Propylbenzene	103-65-1	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Styrene	100-42-5	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,1,1,2-Tetrachloroethane	630-20-6	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,1,2,2-Tetrachloroethane	79-34-5	<0.0947	0.0947	mg/kg	05/25/11 22:43		0.95
Tetrachloroethylene	127-18-4	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Toluene	108-88-3	0.445	0.0947	mg/kg	05/25/11 22:43		0.95
1,2,4-Trichlorobenzene	120-82-1	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,2,3-Trichlorobenzene	87-61-6	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,1,2-Trichloroethane	79-00-5	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
1,1,1-Trichloroethane	71-55-6	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Trichloroethene	79-01-6	<0.0473	0.0473	mg/kg	05/25/11 22:43		0.95
Trichlorofluoromethane	75-69-4	<0.473	0.473	mg/kg	05/25/11 22:43	V1	0.95
1,2,3-Trichloropropane	96-18-4	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
1,2,4-Trimethylbenzene	95-63-6	0.651	0.237	mg/kg	05/25/11 22:43		0.95
1,3,5-Trimethylbenzene	108-67-8	<0.237	0.237	mg/kg	05/25/11 22:43		0.95
Vinyl Acetate	108-05-4	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
Vinyl Chloride	75-01-4	<0.473	0.473	mg/kg	05/25/11 22:43		0.95
o-Xylene	95-47-6	0.305	0.0473	mg/kg	05/25/11 22:43		0.95
m,p-Xylenes	179601-23-1	0.430	0.0947	mg/kg	05/25/11 22:43		0.95
Total Xylenes	1330-20-7	0.735	0.0473	mg/kg	05/25/11 22:43		0.95

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	62-123	05/25/11 22:43	
Dibromofluoromethane	1868-53-7	99	%	52-140	05/25/11 22:43	
1,2-Dichloroethane-D4	17060-07-0	109	%	54-133	05/25/11 22:43	
Toluene-D8	2037-26-5	100	%	63-126	05/25/11 22:43	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-21	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-005	Date Collected: May-19-11 08:30	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	05/31/11 23:43		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	05/31/11 23:43		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	05/31/11 23:43	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	05/31/11 23:43		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	05/31/11 23:43		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	05/31/11 23:43	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	05/31/11 23:43		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	05/31/11 23:43		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	05/31/11 23:43		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	05/31/11 23:43		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	05/31/11 23:43		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	05/31/11 23:43		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	05/31/11 23:43		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	05/31/11 23:43		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	05/31/11 23:43		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	05/31/11 23:43		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	05/31/11 23:43		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	05/31/11 23:43		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-21	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-005	Date Collected: May-19-11 08:30	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	05/31/11 23:43		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	05/31/11 23:43		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	05/31/11 23:43		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	05/31/11 23:43	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	05/31/11 23:43		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
3&4-Methylphenol		<0.500	0.500	mg/kg	05/31/11 23:43		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	05/31/11 23:43		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	05/31/11 23:43		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	05/31/11 23:43		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	05/31/11 23:43		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	05/31/11 23:43		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	05/31/11 23:43		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	05/31/11 23:43		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	05/31/11 23:43		1
Phenol	108-95-2	<0.330	0.330	mg/kg	05/31/11 23:43		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	05/31/11 23:43	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	05/31/11 23:43		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	05/31/11 23:43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	69	%	44-103	05/31/11 23:43	
2-Fluorophenol	367-12-4	58	%	15-111	05/31/11 23:43	
Nitrobenzene-d5	4165-60-0	56	%	45-109	05/31/11 23:43	
Phenol-d6	13127-88-3	62	%	37-105	05/31/11 23:43	
Terphenyl-D14	1718-51-0	89	%	41-118	05/31/11 23:43	
2,4,6-Tribromophenol	118-79-6	60	%	10-124	05/31/11 23:43	
2-Chlorophenol-D4	93951-73-6	61	%	24-110	05/31/11 23:43	
1,2-Dichlorobenzene-D4	2199-69-1	53	%	38-102	05/31/11 23:43	



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City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-22	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-006	Date Collected: May-19-11 08:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:45
Seq Number: 857697	Basis: Wet Weight
Dilution Analysis:	
Seq#: 857697 Date Analyzed: 06/02/11 12:56 Date Prep: 05/19/11 08:45	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.15	1.15	mg/kg	05/25/11 23:35		0.77
Benzene	71-43-2	0.0588	0.0384	mg/kg	05/25/11 23:35		0.77
Bromobenzene	108-86-1	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
Bromochloromethane	74-97-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Bromodichloromethane	75-27-4	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Bromoform	75-25-2	<0.0768	0.0768	mg/kg	05/25/11 23:35		0.77
Bromomethane	74-83-9	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
2-Butanone	78-93-3	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
tert-Butylbenzene	98-06-6	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
Sec-Butylbenzene	135-98-8	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
n-Butylbenzene	104-51-8	0.434	0.192	mg/kg	05/25/11 23:35		0.77
Carbon Disulfide	75-15-0	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Carbon Tetrachloride	56-23-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Chlorobenzene	108-90-7	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Chloroethane	75-00-3	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Chloroform	67-66-3	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Chloromethane	74-87-3	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
2-Chlorotoluene	95-49-8	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
4-Chlorotoluene	106-43-4	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,2-Dibromo-3-Chloropropane	96-12-8	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Dibromochloromethane	124-48-1	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,2-Dibromoethane	106-93-4	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Dibromomethane	74-95-3	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,2-Dichlorobenzene	95-50-1	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,3-Dichlorobenzene	541-73-1	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,4-Dichlorobenzene	106-46-7	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Dichlorodifluoromethane	75-71-8	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
1,2-Dichloroethane	107-06-2	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,1-Dichloroethane	75-34-3	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
trans-1,2-dichloroethene	156-60-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
cis-1,2-Dichloroethene	156-59-2	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,1-Dichloroethene	75-35-4	<0.0768	0.0768	mg/kg	05/25/11 23:35		0.77
2,2-Dichloropropane	594-20-7	<0.192	0.192	mg/kg	05/25/11 23:35	L1	0.77
1,3-Dichloropropane	142-28-9	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,2-Dichloropropane	78-87-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
trans-1,3-dichloropropene	10061-02-6	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-22	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-006	Date Collected: May-19-11 08:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 08:45
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
1,1-Dichloropropene	563-58-6	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
cis-1,3-Dichloropropene	10061-01-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Ethylbenzene	100-41-4	0.447	0.0768	mg/kg	05/25/11 23:35		0.77
Hexachlorobutadiene	87-68-3	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
2-Hexanone	591-78-6	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Iodomethane (Methyl Iodide)	74-88-4	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Naphthalene	91-20-3	1.58	0.192	mg/kg	05/25/11 23:35		0.77
Isopropylbenzene	98-82-8	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
Methylene Chloride	75-09-2	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
4-Methyl-2-Pentanone	108-10-1	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
MTBE	1634-04-4	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
n-Propylbenzene	103-65-1	0.663	0.192	mg/kg	05/25/11 23:35		0.77
Styrene	100-42-5	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,1,1,2-Tetrachloroethane	630-20-6	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,1,2,2-Tetrachloroethane	79-34-5	<0.0768	0.0768	mg/kg	05/25/11 23:35		0.77
Tetrachloroethylene	127-18-4	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Toluene	108-88-3	0.265	0.0768	mg/kg	05/25/11 23:35		0.77
1,2,4-Trichlorobenzene	120-82-1	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,2,3-Trichlorobenzene	87-61-6	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,1,2-Trichloroethane	79-00-5	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
1,1,1-Trichloroethane	71-55-6	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Trichloroethene	79-01-6	<0.0384	0.0384	mg/kg	05/25/11 23:35		0.77
Trichlorofluoromethane	75-69-4	<0.384	0.384	mg/kg	05/25/11 23:35	V1	0.77
1,2,3-Trichloropropane	96-18-4	<0.192	0.192	mg/kg	05/25/11 23:35		0.77
1,2,4-Trimethylbenzene	95-63-6	5.02	1.92	mg/kg	06/02/11 12:56	D2	7.68
1,3,5-Trimethylbenzene	108-67-8	1.08	0.192	mg/kg	05/25/11 23:35		0.77
Vinyl Acetate	108-05-4	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
Vinyl Chloride	75-01-4	<0.384	0.384	mg/kg	05/25/11 23:35		0.77
o-Xylene	95-47-6	0.682	0.0384	mg/kg	05/25/11 23:35		0.77
m,p-Xylenes	179601-23-1	1.25	0.0768	mg/kg	05/25/11 23:35		0.77
Total Xylenes	1330-20-7	1.93	0.0384	mg/kg	05/25/11 23:35		0.77

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	100	%	62-123	05/25/11 23:35	
Dibromofluoromethane	1868-53-7	103	%	52-140	05/25/11 23:35	
1,2-Dichloroethane-D4	17060-07-0	116	%	54-133	05/25/11 23:35	
Toluene-D8	2037-26-5	102	%	63-126	05/25/11 23:35	

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-22	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-006	Date Collected: May-19-11 08:45	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Acenaphthylene	208-96-8	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Anthracene	120-12-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Azobenzene	103-33-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzo(a)anthracene	56-55-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1L1	5
Benzo(a)pyrene	50-32-8	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzo(b)fluoranthene	205-99-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzo(g,h,i)perylene	191-24-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzo(k)fluoranthene	207-08-9	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzoic Acid	65-85-0	<25.0	25.0	mg/kg	06/03/11 01:43	D1	5
Benzyl Alcohol	100-51-6	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Benzyl Butyl Phthalate	85-68-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1L1	5
bis(2-chloroethoxy) methane	111-91-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
bis(2-chloroethyl) ether	111-44-4	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
bis(2-chloroisopropyl) ether	108-60-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
bis(2-ethylhexyl) phthalate	117-81-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4-Bromophenyl-phenylether	101-55-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
di-n-Butyl Phthalate	84-74-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4-chloro-3-methylphenol	59-50-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4-Chloroaniline	106-47-8	<5.00	5.00	mg/kg	06/03/11 01:43	D1	5
2-Chloronaphthalene	91-58-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
2-Chlorophenol	95-57-8	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4-Chlorophenyl Phenyl Ether	7005-72-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Chrysene	218-01-9	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Dibenz(a,h)Anthracene	53-70-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Dibenzofuran	132-64-9	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
1,2-Dichlorobenzene	95-50-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
1,3-Dichlorobenzene	541-73-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
1,4-Dichlorobenzene	106-46-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
3,3-Dichlorobenzidine	91-94-1	<8.50	8.50	mg/kg	06/03/11 01:43	D1	5
2,4-Dichlorophenol	120-83-2	<2.50	2.50	mg/kg	06/03/11 01:43	D1	5
Diethyl Phthalate	84-66-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Dimethyl Phthalate	131-11-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
2,4-Dimethylphenol	105-67-9	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4,6-dinitro-2-methyl phenol	534-52-1	<10.0	10.0	mg/kg	06/03/11 01:43	D1	5
2,4-Dinitrophenol	51-28-5	<10.0	10.0	mg/kg	06/03/11 01:43	D1	5
2,4-Dinitrotoluene	121-14-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
2,6-Dinitrotoluene	606-20-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Fluoranthene	206-44-0	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Fluorene	86-73-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-22	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-006	Date Collected: May-19-11 08:45	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-25-11 13:00
Seq Number: 858061	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Hexachlorobutadiene	87-68-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Hexachlorocyclopentadiene	77-47-4	<10.0	10.0	mg/kg	06/03/11 01:43	D1	5
Hexachloroethane	67-72-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Indeno(1,2,3-c,d)Pyrene	193-39-5	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Isophorone	78-59-1	<1.65	1.65	mg/kg	06/03/11 01:43	D1L1	5
2-Methylnaphthalene	91-57-6	2.32	1.65	mg/kg	06/03/11 01:43	D2	5
2-methylphenol	95-48-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
3&4-Methylphenol		<2.50	2.50	mg/kg	06/03/11 01:43	D1	5
Naphthalene	91-20-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Nitrobenzene	98-95-3	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
2-Nitrophenol	88-75-5	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
4-Nitrophenol	100-02-7	<10.0	10.0	mg/kg	06/03/11 01:43	D1	5
N-Nitrosodi-n-Propylamine	621-64-7	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
N-Nitrosodiphenylamine	86-30-6	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
di-n-Octyl Phthalate	117-84-0	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Pentachlorophenol	87-86-5	<3.35	3.35	mg/kg	06/03/11 01:43	D1	5
Phenanthrene	85-01-8	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Phenol	108-95-2	<1.65	1.65	mg/kg	06/03/11 01:43	D1	5
Pyrene	129-00-0	<1.65	1.65	mg/kg	06/03/11 01:43	D1L1	5
1,2,4-Trichlorobenzene	120-82-1	<2.50	2.50	mg/kg	06/03/11 01:43	D1	5
2,4,6-Trichlorophenol	88-06-2	<5.00	5.00	mg/kg	06/03/11 01:43	D1	5

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	79	%	44-103	06/03/11 01:43	
2-Fluorophenol	367-12-4	76	%	15-111	06/03/11 01:43	
Nitrobenzene-d5	4165-60-0	75	%	45-109	06/03/11 01:43	
Phenol-d6	13127-88-3	86	%	37-105	06/03/11 01:43	
Terphenyl-D14	1718-51-0	98	%	41-118	06/03/11 01:43	
2,4,6-Tribromophenol	118-79-6	90	%	10-124	06/03/11 01:43	
2-Chlorophenol-D4	93951-73-6	79	%	24-110	06/03/11 01:43	
1,2-Dichlorobenzene-D4	2199-69-1	69	%	38-102	06/03/11 01:43	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-22	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-006	Date Collected: May-19-11 08:45	

Analytical Method: Metals, Total, by SW 6010B	Prep Method: SW3050B
Tech: JHO	% Moisture:
Analyst: MGR	Basis: Wet Weight
Seq Number: 857884	Date Prep: May-26-11 11:00

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chromium	7440-47-3	<5.00	5.00	mg/kg	05/26/11 17:10		1
Lead	7439-92-1	<5.00	5.00	mg/kg	05/26/11 17:10		1
Magnesium	7439-95-4	753	50.0	mg/kg	05/26/11 17:10		1
Manganese	7439-96-5	42.2	5.00	mg/kg	05/26/11 17:10		1

Analytical Method: Ferrous Iron by SM3500	% Moisture:
Tech: DAD	Basis: Wet Weight
Analyst: RLH	
Seq Number: 860063	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Water Soluble Ferrous Iron	IRON II	<1.00	1.00	mg/kg	06/14/11 10:00	T3	1

Analytical Method: Alkalinity by SM 2320B	% Moisture:
Tech: RLH	Basis: Wet Weight
Analyst: RLH	
Seq Number: 857369	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Water Soluble Alkalinity, Total (as CaCO3)		280	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Bicarbonate (as CaCO: ALKCACO3)		280	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Carbonate (as CaCO3) ALKCARB		<200	200	mg/kg	05/24/11 15:00	T3D2	10
Water Soluble Alkalinity, Hydroxide (as CaCO3)		<200	200	mg/kg	05/24/11 15:00	T3D2	10



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City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-23	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-007	Date Collected: May-19-11 09:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 09:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.52	1.52	mg/kg	05/25/11 23:09		1.01
Benzene	71-43-2	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Bromobenzene	108-86-1	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Bromochloromethane	74-97-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Bromodichloromethane	75-27-4	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Bromoform	75-25-2	<0.101	0.101	mg/kg	05/25/11 23:09		1.01
Bromomethane	74-83-9	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
2-Butanone	78-93-3	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
tert-Butylbenzene	98-06-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Sec-Butylbenzene	135-98-8	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
n-Butylbenzene	104-51-8	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Carbon Disulfide	75-15-0	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Carbon Tetrachloride	56-23-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Chlorobenzene	108-90-7	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Chloroethane	75-00-3	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Chloroform	67-66-3	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Chloromethane	74-87-3	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
2-Chlorotoluene	95-49-8	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
4-Chlorotoluene	106-43-4	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,2-Dibromo-3-Chloropropane	96-12-8	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Dibromochloromethane	124-48-1	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,2-Dibromoethane	106-93-4	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Dibromomethane	74-95-3	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,2-Dichlorobenzene	95-50-1	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,3-Dichlorobenzene	541-73-1	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,4-Dichlorobenzene	106-46-7	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Dichlorodifluoromethane	75-71-8	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
1,2-Dichloroethane	107-06-2	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,1-Dichloroethane	75-34-3	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
trans-1,2-dichloroethene	156-60-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
cis-1,2-Dichloroethene	156-59-2	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,1-Dichloroethene	75-35-4	<0.101	0.101	mg/kg	05/25/11 23:09		1.01
2,2-Dichloropropane	594-20-7	<0.254	0.254	mg/kg	05/25/11 23:09	L1	1.01
1,3-Dichloropropane	142-28-9	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,2-Dichloropropane	78-87-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
trans-1,3-dichloropropene	10061-02-6	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,1-Dichloropropene	563-58-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
cis-1,3-Dichloropropene	10061-01-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Ethylbenzene	100-41-4	<0.101	0.101	mg/kg	05/25/11 23:09		1.01

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-23	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-007	Date Collected: May-19-11 09:00	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 09:00
Seq Number: 857697	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
2-Hexanone	591-78-6	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Iodomethane (Methyl Iodide)	74-88-4	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Naphthalene	91-20-3	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Isopropylbenzene	98-82-8	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Methylene Chloride	75-09-2	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
4-Methyl-2-Pentanone	108-10-1	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
MTBE	1634-04-4	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
n-Propylbenzene	103-65-1	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Styrene	100-42-5	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,1,1,2-Tetrachloroethane	630-20-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,1,2,2-Tetrachloroethane	79-34-5	<0.101	0.101	mg/kg	05/25/11 23:09		1.01
Tetrachloroethylene	127-18-4	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Toluene	108-88-3	<0.101	0.101	mg/kg	05/25/11 23:09		1.01
1,2,4-Trichlorobenzene	120-82-1	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,2,3-Trichlorobenzene	87-61-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,1,2-Trichloroethane	79-00-5	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
1,1,1-Trichloroethane	71-55-6	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Trichloroethene	79-01-6	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
Trichlorofluoromethane	75-69-4	<0.507	0.507	mg/kg	05/25/11 23:09	V1	1.01
1,2,3-Trichloropropane	96-18-4	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,2,4-Trimethylbenzene	95-63-6	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
1,3,5-Trimethylbenzene	108-67-8	<0.254	0.254	mg/kg	05/25/11 23:09		1.01
Vinyl Acetate	108-05-4	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
Vinyl Chloride	75-01-4	<0.507	0.507	mg/kg	05/25/11 23:09		1.01
o-Xylene	95-47-6	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01
m,p-Xylenes	179601-23-1	<0.101	0.101	mg/kg	05/25/11 23:09		1.01
Total Xylenes	1330-20-7	<0.0507	0.0507	mg/kg	05/25/11 23:09		1.01

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	95	%	62-123	05/25/11 23:09	
Dibromofluoromethane	1868-53-7	93	%	52-140	05/25/11 23:09	
1,2-Dichloroethane-D4	17060-07-0	101	%	54-133	05/25/11 23:09	
Toluene-D8	2037-26-5	93	%	63-126	05/25/11 23:09	



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City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-23	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-007	Date Collected: May-19-11 09:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	06/01/11 16:56		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	06/01/11 16:56		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	06/01/11 16:56	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	06/01/11 16:56		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	06/01/11 16:56		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	06/01/11 16:56	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	06/01/11 16:56		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	06/01/11 16:56		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	06/01/11 16:56		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	06/01/11 16:56		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	06/01/11 16:56		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	06/01/11 16:56		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	06/01/11 16:56		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	06/01/11 16:56		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	06/01/11 16:56		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	06/01/11 16:56		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	06/01/11 16:56		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	06/01/11 16:56		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-23	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-007	Date Collected: May-19-11 09:00	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	06/01/11 16:56		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	06/01/11 16:56		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	06/01/11 16:56		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	06/01/11 16:56	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	06/01/11 16:56		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
3&4-Methylphenol		<0.498	0.498	mg/kg	06/01/11 16:56		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	06/01/11 16:56		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	06/01/11 16:56		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	06/01/11 16:56		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	06/01/11 16:56		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	06/01/11 16:56		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	06/01/11 16:56		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	06/01/11 16:56		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	06/01/11 16:56		1
Phenol	108-95-2	<0.328	0.328	mg/kg	06/01/11 16:56		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	06/01/11 16:56	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	06/01/11 16:56		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	06/01/11 16:56		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	70	%	44-103	06/01/11 16:56	
2-Fluorophenol	367-12-4	60	%	15-111	06/01/11 16:56	
Nitrobenzene-d5	4165-60-0	63	%	45-109	06/01/11 16:56	
Phenol-d6	13127-88-3	65	%	37-105	06/01/11 16:56	
Terphenyl-D14	1718-51-0	91	%	41-118	06/01/11 16:56	
2,4,6-Tribromophenol	118-79-6	54	%	10-124	06/01/11 16:56	
2-Chlorophenol-D4	93951-73-6	63	%	24-110	06/01/11 16:56	
1,2-Dichlorobenzene-D4	2199-69-1	57	%	38-102	06/01/11 16:56	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: GW-051911-MES-24	Matrix: Water	Date Received: May-19-11 16:30
Lab Sample Id: 417239-008	Date Collected: May-19-11 11:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	
Dilution Analysis:	
Seq#: 856979 Date Analyzed: 05/22/11 02:43 Date Prep: 05/21/11 16:15	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	23.7	20.0	ug/L	05/22/11 22:31		1
Benzene	71-43-2	889	5.00	ug/L	05/22/11 02:43	D2	10
Bromobenzene	108-86-1	<1.50	1.50	ug/L	05/22/11 22:31		1
Bromochloromethane	74-97-5	<0.500	0.500	ug/L	05/22/11 22:31		1
Bromodichloromethane	75-27-4	<0.500	0.500	ug/L	05/22/11 22:31		1
Bromoform	75-25-2	<1.00	1.00	ug/L	05/22/11 22:31		1
Bromomethane	74-83-9	<5.00	5.00	ug/L	05/22/11 22:31		1
2-Butanone	78-93-3	12.9	5.00	ug/L	05/22/11 22:31		1
n-Butylbenzene	104-51-8	22.8	2.50	ug/L	05/22/11 22:31		1
Sec-Butylbenzene	135-98-8	9.24	1.50	ug/L	05/22/11 22:31		1
tert-Butylbenzene	98-06-6	<2.50	2.50	ug/L	05/22/11 22:31		1
Carbon Disulfide	75-15-0	0.680	0.500	ug/L	05/22/11 22:31		1
Carbon Tetrachloride	56-23-5	<0.500	0.500	ug/L	05/22/11 22:31		1
Chlorobenzene	108-90-7	<0.500	0.500	ug/L	05/22/11 22:31		1
Chloroethane	75-00-3	<4.00	4.00	ug/L	05/22/11 22:31		1
Chloroform	67-66-3	<0.500	0.500	ug/L	05/22/11 22:31		1
Chloromethane	74-87-3	<5.00	5.00	ug/L	05/22/11 22:31		1
2-Chlorotoluene	95-49-8	<1.50	1.50	ug/L	05/22/11 22:31		1
4-Chlorotoluene	106-43-4	<2.00	2.00	ug/L	05/22/11 22:31		1
4-Isopropyltoluene	99-87-6	4.72	1.50	ug/L	05/22/11 22:31		1
Dibromochloromethane	124-48-1	<0.500	0.500	ug/L	05/22/11 22:31		1
1,2-Dibromo-3-Chloropropane	96-12-8	<2.00	2.00	ug/L	05/22/11 22:31		1
1,2-Dibromoethane	106-93-4	<0.500	0.500	ug/L	05/22/11 22:31		1
Dibromomethane	74-95-3	<0.500	0.500	ug/L	05/22/11 22:31		1
1,2-Dichlorobenzene	95-50-1	<1.50	1.50	ug/L	05/22/11 22:31		1
1,3-Dichlorobenzene	541-73-1	<1.50	1.50	ug/L	05/22/11 22:31		1
1,4-Dichlorobenzene	106-46-7	<1.50	1.50	ug/L	05/22/11 22:31		1
Dichlorodifluoromethane	75-71-8	<2.00	2.00	ug/L	05/22/11 22:31		1
1,1-Dichloroethane	75-34-3	<0.500	0.500	ug/L	05/22/11 22:31		1
1,2-Dichloroethane	107-06-2	1.00	0.500	ug/L	05/22/11 22:31		1
1,1-Dichloroethene	75-35-4	<0.500	0.500	ug/L	05/22/11 22:31		1
cis-1,2-Dichloroethene	156-59-2	<0.500	0.500	ug/L	05/22/11 22:31		1
trans-1,2-dichloroethene	156-60-5	<0.500	0.500	ug/L	05/22/11 22:31		1
1,2-Dichloropropane	78-87-5	<0.500	0.500	ug/L	05/22/11 22:31		1
1,3-Dichloropropane	142-28-9	<1.00	1.00	ug/L	05/22/11 22:31		1
2,2-Dichloropropane	594-20-7	<0.500	0.500	ug/L	05/22/11 22:31		1
1,1-Dichloropropene	563-58-6	<1.00	1.00	ug/L	05/22/11 22:31		1



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: GW-051911-MES-24	Matrix: Water	Date Received: May-19-11 16:30
Lab Sample Id: 417239-008	Date Collected: May-19-11 11:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5030C
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-22-11 18:15
Seq Number: 857169	

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
cis-1,3-Dichloropropene	10061-01-5	<1.00	1.00	ug/L	05/22/11 22:31		1
trans-1,3-dichloropropene	10061-02-6	<0.500	0.500	ug/L	05/22/11 22:31		1
Ethylbenzene	100-41-4	367	20.0	ug/L	05/22/11 02:43	D2	10
Hexachlorobutadiene	87-68-3	<5.00	5.00	ug/L	05/22/11 22:31		1
2-Hexanone	591-78-6	5.70	5.00	ug/L	05/22/11 22:31		1
Isopropylbenzene	98-82-8	27.4	2.50	ug/L	05/22/11 22:31		1
Methylene Chloride	75-09-2	<3.00	3.00	ug/L	05/22/11 22:31		1
Iodomethane (Methyl Iodide)	74-88-4	<2.00	2.00	ug/L	05/22/11 22:31		1
4-Methyl-2-Pentanone	108-10-1	<5.00	5.00	ug/L	05/22/11 22:31		1
MTBE	1634-04-4	201	20.0	ug/L	05/22/11 02:43	D2	10
Naphthalene	91-20-3	199	50.0	ug/L	05/22/11 02:43	D2	10
n-Propylbenzene	103-65-1	66.7	2.00	ug/L	05/22/11 22:31		1
Styrene	100-42-5	<1.00	1.00	ug/L	05/22/11 22:31		1
1,1,1,2-Tetrachloroethane	630-20-6	<0.500	0.500	ug/L	05/22/11 22:31		1
1,1,2,2-Tetrachloroethane	79-34-5	<0.500	0.500	ug/L	05/22/11 22:31		1
Tetrachloroethylene	127-18-4	<0.500	0.500	ug/L	05/22/11 22:31		1
Toluene	108-88-3	438	20.0	ug/L	05/22/11 02:43	D2	10
Total Trihalomethane		<0.500	0.500	ug/L	05/22/11 22:31		1
1,2,3-Trichlorobenzene	87-61-6	<5.00	5.00	ug/L	05/22/11 22:31		1
1,2,4-Trichlorobenzene	120-82-1	<5.00	5.00	ug/L	05/22/11 22:31		1
1,1,1-Trichloroethane	71-55-6	<0.500	0.500	ug/L	05/22/11 22:31		1
1,1,2-Trichloroethane	79-00-5	<0.500	0.500	ug/L	05/22/11 22:31		1
Trichloroethene	79-01-6	<0.500	0.500	ug/L	05/22/11 22:31		1
Trichlorofluoromethane	75-69-4	<2.00	2.00	ug/L	05/22/11 22:31		1
1,2,3-Trichloropropane	96-18-4	<1.00	1.00	ug/L	05/22/11 22:31		1
1,2,4-Trimethylbenzene	95-63-6	522	20.0	ug/L	05/22/11 02:43	D2	10
1,3,5-Trimethylbenzene	108-67-8	148	15.0	ug/L	05/22/11 02:43	D2	10
o-Xylene	95-47-6	386	10.0	ug/L	05/22/11 02:43	D2	10
m,p-Xylenes	179601-23-1	787	20.0	ug/L	05/22/11 02:43	D2	10
Vinyl Acetate	108-05-4	<5.00	5.00	ug/L	05/22/11 22:31		1
Vinyl Chloride	75-01-4	<0.500	0.500	ug/L	05/22/11 22:31		1
Total Xylenes	1330-20-7	1170	10.0	ug/L	05/22/11 02:43	D2	10

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	103	%	70-135	05/22/11 22:31	
Dibromofluoromethane	1868-53-7	92	%	69-133	05/22/11 22:31	
1,2-Dichloroethane-D4	17060-07-0	86	%	66-139	05/22/11 22:31	
Toluene-D8	2037-26-5	89	%	70-130	05/22/11 22:31	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-25	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-009	Date Collected: May-19-11 14:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:45
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.34	1.34	mg/kg	05/21/11 23:27		0.9
Benzene	71-43-2	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Bromobenzene	108-86-1	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Bromochloromethane	74-97-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Bromodichloromethane	75-27-4	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Bromoform	75-25-2	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9
Bromomethane	74-83-9	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
2-Butanone	78-93-3	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
tert-Butylbenzene	98-06-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Sec-Butylbenzene	135-98-8	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
n-Butylbenzene	104-51-8	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Carbon Disulfide	75-15-0	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Carbon Tetrachloride	56-23-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Chlorobenzene	108-90-7	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Chloroethane	75-00-3	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Chloroform	67-66-3	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Chloromethane	74-87-3	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
2-Chlorotoluene	95-49-8	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
4-Chlorotoluene	106-43-4	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,2-Dibromo-3-Chloropropane	96-12-8	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Dibromochloromethane	124-48-1	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,2-Dibromoethane	106-93-4	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Dibromomethane	74-95-3	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,2-Dichlorobenzene	95-50-1	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,3-Dichlorobenzene	541-73-1	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,4-Dichlorobenzene	106-46-7	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Dichlorodifluoromethane	75-71-8	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
1,2-Dichloroethane	107-06-2	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,1-Dichloroethane	75-34-3	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
trans-1,2-dichloroethene	156-60-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
cis-1,2-Dichloroethene	156-59-2	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,1-Dichloroethene	75-35-4	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9
2,2-Dichloropropane	594-20-7	<0.224	0.224	mg/kg	05/21/11 23:27	L1	0.9
1,3-Dichloropropane	142-28-9	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,2-Dichloropropane	78-87-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
trans-1,3-dichloropropene	10061-02-6	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,1-Dichloropropene	563-58-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
cis-1,3-Dichloropropene	10061-01-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Ethylbenzene	100-41-4	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-25	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-009	Date Collected: May-19-11 14:45	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:45
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
2-Hexanone	591-78-6	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Iodomethane (Methyl Iodide)	74-88-4	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Isopropylbenzene	98-82-8	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Naphthalene	91-20-3	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Methylene Chloride	75-09-2	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
4-Methyl-2-Pentanone	108-10-1	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
MTBE	1634-04-4	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
n-Propylbenzene	103-65-1	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Styrene	100-42-5	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,1,1,2-Tetrachloroethane	630-20-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,1,2,2-Tetrachloroethane	79-34-5	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9
Tetrachloroethylene	127-18-4	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Toluene	108-88-3	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9
1,2,4-Trichlorobenzene	120-82-1	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,2,3-Trichlorobenzene	87-61-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,1,2-Trichloroethane	79-00-5	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
1,1,1-Trichloroethane	71-55-6	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Trichloroethene	79-01-6	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
Trichlorofluoromethane	75-69-4	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
1,2,3-Trichloropropane	96-18-4	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,2,4-Trimethylbenzene	95-63-6	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
1,3,5-Trimethylbenzene	108-67-8	<0.224	0.224	mg/kg	05/21/11 23:27		0.9
Vinyl Acetate	108-05-4	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
Vinyl Chloride	75-01-4	<0.448	0.448	mg/kg	05/21/11 23:27		0.9
o-Xylene	95-47-6	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9
m,p-Xylenes	179601-23-1	<0.0896	0.0896	mg/kg	05/21/11 23:27		0.9
Total Xylenes	1330-20-7	<0.0448	0.0448	mg/kg	05/21/11 23:27		0.9

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	94	%	62-123	05/21/11 23:27	
Dibromofluoromethane	1868-53-7	98	%	52-140	05/21/11 23:27	
1,2-Dichloroethane-D4	17060-07-0	110	%	54-133	05/21/11 23:27	
Toluene-D8	2037-26-5	95	%	63-126	05/21/11 23:27	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-25	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-009	Date Collected: May-19-11 14:45	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	06/01/11 17:48		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	06/01/11 17:48		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	06/01/11 17:48	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	06/01/11 17:48		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	06/01/11 17:48		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	06/01/11 17:48	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	06/01/11 17:48		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	06/01/11 17:48		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	06/01/11 17:48		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	06/01/11 17:48		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	06/01/11 17:48		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	06/01/11 17:48		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	06/01/11 17:48		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	06/01/11 17:48		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	06/01/11 17:48		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	06/01/11 17:48		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	06/01/11 17:48		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	06/01/11 17:48		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-25	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-009	Date Collected: May-19-11 14:45	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	06/01/11 17:48		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	06/01/11 17:48		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	06/01/11 17:48		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	06/01/11 17:48	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	06/01/11 17:48		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
3&4-Methylphenol		<0.498	0.498	mg/kg	06/01/11 17:48		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	06/01/11 17:48		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	06/01/11 17:48		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	06/01/11 17:48		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	06/01/11 17:48		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	06/01/11 17:48		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	06/01/11 17:48		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	06/01/11 17:48		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	06/01/11 17:48		1
Phenol	108-95-2	<0.328	0.328	mg/kg	06/01/11 17:48		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	06/01/11 17:48	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	06/01/11 17:48		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	06/01/11 17:48		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	62	%	44-103	06/01/11 17:48	
2-Fluorophenol	367-12-4	48	%	15-111	06/01/11 17:48	
Nitrobenzene-d5	4165-60-0	52	%	45-109	06/01/11 17:48	
Phenol-d6	13127-88-3	53	%	37-105	06/01/11 17:48	
Terphenyl-D14	1718-51-0	74	%	41-118	06/01/11 17:48	
2,4,6-Tribromophenol	118-79-6	42	%	10-124	06/01/11 17:48	
2-Chlorophenol-D4	93951-73-6	52	%	24-110	06/01/11 17:48	
1,2-Dichlorobenzene-D4	2199-69-1	62	%	38-102	06/01/11 17:48	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-26	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-010	Date Collected: May-19-11 14:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:50
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.33	1.33	mg/kg	05/22/11 23:53		0.88
Benzene	71-43-2	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Bromobenzene	108-86-1	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Bromochloromethane	74-97-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Bromodichloromethane	75-27-4	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Bromoform	75-25-2	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88
Bromomethane	74-83-9	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
2-Butanone	78-93-3	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
tert-Butylbenzene	98-06-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Sec-Butylbenzene	135-98-8	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
n-Butylbenzene	104-51-8	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Carbon Disulfide	75-15-0	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Carbon Tetrachloride	56-23-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Chlorobenzene	108-90-7	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Chloroethane	75-00-3	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Chloroform	67-66-3	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Chloromethane	74-87-3	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
2-Chlorotoluene	95-49-8	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
4-Chlorotoluene	106-43-4	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,2-Dibromo-3-Chloropropane	96-12-8	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Dibromochloromethane	124-48-1	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,2-Dibromoethane	106-93-4	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Dibromomethane	74-95-3	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,2-Dichlorobenzene	95-50-1	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,3-Dichlorobenzene	541-73-1	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,4-Dichlorobenzene	106-46-7	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Dichlorodifluoromethane	75-71-8	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
1,2-Dichloroethane	107-06-2	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,1-Dichloroethane	75-34-3	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
trans-1,2-dichloroethene	156-60-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
cis-1,2-Dichloroethene	156-59-2	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,1-Dichloroethene	75-35-4	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88
2,2-Dichloropropane	594-20-7	<0.221	0.221	mg/kg	05/22/11 23:53	L1	0.88
1,3-Dichloropropane	142-28-9	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,2-Dichloropropane	78-87-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
trans-1,3-dichloropropene	10061-02-6	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,1-Dichloropropene	563-58-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
cis-1,3-Dichloropropene	10061-01-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Ethylbenzene	100-41-4	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-26	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-010	Date Collected: May-19-11 14:50	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:50
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
2-Hexanone	591-78-6	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Iodomethane (Methyl Iodide)	74-88-4	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Naphthalene	91-20-3	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Isopropylbenzene	98-82-8	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Methylene Chloride	75-09-2	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
4-Methyl-2-Pentanone	108-10-1	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
MTBE	1634-04-4	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
n-Propylbenzene	103-65-1	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Styrene	100-42-5	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,1,1,2-Tetrachloroethane	630-20-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,1,2,2-Tetrachloroethane	79-34-5	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88
Tetrachloroethylene	127-18-4	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Toluene	108-88-3	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88
1,2,4-Trichlorobenzene	120-82-1	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,2,3-Trichlorobenzene	87-61-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,1,2-Trichloroethane	79-00-5	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
1,1,1-Trichloroethane	71-55-6	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Trichloroethene	79-01-6	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
Trichlorofluoromethane	75-69-4	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
1,2,3-Trichloropropane	96-18-4	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,2,4-Trimethylbenzene	95-63-6	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
1,3,5-Trimethylbenzene	108-67-8	<0.221	0.221	mg/kg	05/22/11 23:53		0.88
Vinyl Acetate	108-05-4	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
Vinyl Chloride	75-01-4	<0.442	0.442	mg/kg	05/22/11 23:53		0.88
o-Xylene	95-47-6	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88
m,p-Xylenes	179601-23-1	<0.0883	0.0883	mg/kg	05/22/11 23:53		0.88
Total Xylenes	1330-20-7	<0.0442	0.0442	mg/kg	05/22/11 23:53		0.88

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	96	%	62-123	05/22/11 23:53	
Dibromofluoromethane	1868-53-7	97	%	52-140	05/22/11 23:53	
1,2-Dichloroethane-D4	17060-07-0	113	%	54-133	05/22/11 23:53	
Toluene-D8	2037-26-5	96	%	63-126	05/22/11 23:53	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-26	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-010	Date Collected: May-19-11 14:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	06/01/11 18:42		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	06/01/11 18:42		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	06/01/11 18:42	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	06/01/11 18:42		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	06/01/11 18:42		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	06/01/11 18:42	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	06/01/11 18:42		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	06/01/11 18:42		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	06/01/11 18:42		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	06/01/11 18:42		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	06/01/11 18:42		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	06/01/11 18:42		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	06/01/11 18:42		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	06/01/11 18:42		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	06/01/11 18:42		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	06/01/11 18:42		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	06/01/11 18:42		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	06/01/11 18:42		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-26	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-010	Date Collected: May-19-11 14:50	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	06/01/11 18:42		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	06/01/11 18:42		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	06/01/11 18:42		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	06/01/11 18:42	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	06/01/11 18:42		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
3&4-Methylphenol		<0.498	0.498	mg/kg	06/01/11 18:42		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	06/01/11 18:42		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	06/01/11 18:42		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	06/01/11 18:42		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	06/01/11 18:42		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	06/01/11 18:42		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	06/01/11 18:42		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	06/01/11 18:42		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	06/01/11 18:42		1
Phenol	108-95-2	<0.328	0.328	mg/kg	06/01/11 18:42		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	06/01/11 18:42	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	06/01/11 18:42		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	06/01/11 18:42		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	65	%	44-103	06/01/11 18:42	
2-Fluorophenol	367-12-4	54	%	15-111	06/01/11 18:42	
Nitrobenzene-d5	4165-60-0	52	%	45-109	06/01/11 18:42	
Phenol-d6	13127-88-3	58	%	37-105	06/01/11 18:42	
Terphenyl-D14	1718-51-0	78	%	41-118	06/01/11 18:42	
2,4,6-Tribromophenol	118-79-6	45	%	10-124	06/01/11 18:42	
2-Chlorophenol-D4	93951-73-6	57	%	24-110	06/01/11 18:42	
1,2-Dichlorobenzene-D4	2199-69-1	62	%	38-102	06/01/11 18:42	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-27	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-011	Date Collected: May-19-11 14:55	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:55
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.45	1.45	mg/kg	05/22/11 00:20		0.97
Benzene	71-43-2	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Bromobenzene	108-86-1	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Bromochloromethane	74-97-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Bromodichloromethane	75-27-4	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Bromoform	75-25-2	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97
Bromomethane	74-83-9	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
2-Butanone	78-93-3	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
tert-Butylbenzene	98-06-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Sec-Butylbenzene	135-98-8	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
n-Butylbenzene	104-51-8	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Carbon Disulfide	75-15-0	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Carbon Tetrachloride	56-23-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Chlorobenzene	108-90-7	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Chloroethane	75-00-3	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Chloroform	67-66-3	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Chloromethane	74-87-3	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
2-Chlorotoluene	95-49-8	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
4-Chlorotoluene	106-43-4	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,2-Dibromo-3-Chloropropane	96-12-8	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Dibromochloromethane	124-48-1	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,2-Dibromoethane	106-93-4	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Dibromomethane	74-95-3	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,2-Dichlorobenzene	95-50-1	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,3-Dichlorobenzene	541-73-1	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,4-Dichlorobenzene	106-46-7	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Dichlorodifluoromethane	75-71-8	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
1,2-Dichloroethane	107-06-2	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,1-Dichloroethane	75-34-3	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
trans-1,2-dichloroethene	156-60-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
cis-1,2-Dichloroethene	156-59-2	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,1-Dichloroethene	75-35-4	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97
2,2-Dichloropropane	594-20-7	<0.241	0.241	mg/kg	05/22/11 00:20	L1	0.97
1,3-Dichloropropane	142-28-9	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,2-Dichloropropane	78-87-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
trans-1,3-dichloropropene	10061-02-6	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,1-Dichloropropene	563-58-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
cis-1,3-Dichloropropene	10061-01-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Ethylbenzene	100-41-4	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-27	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-011	Date Collected: May-19-11 14:55	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 14:55
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
2-Hexanone	591-78-6	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Iodomethane (Methyl Iodide)	74-88-4	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Naphthalene	91-20-3	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Isopropylbenzene	98-82-8	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Methylene Chloride	75-09-2	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
4-Methyl-2-Pentanone	108-10-1	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
MTBE	1634-04-4	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
n-Propylbenzene	103-65-1	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Styrene	100-42-5	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,1,1,2-Tetrachloroethane	630-20-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,1,2,2-Tetrachloroethane	79-34-5	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97
Tetrachloroethylene	127-18-4	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Toluene	108-88-3	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97
1,2,4-Trichlorobenzene	120-82-1	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,2,3-Trichlorobenzene	87-61-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,1,2-Trichloroethane	79-00-5	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
1,1,1-Trichloroethane	71-55-6	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Trichloroethene	79-01-6	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
Trichlorofluoromethane	75-69-4	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
1,2,3-Trichloropropane	96-18-4	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,2,4-Trimethylbenzene	95-63-6	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
1,3,5-Trimethylbenzene	108-67-8	<0.241	0.241	mg/kg	05/22/11 00:20		0.97
Vinyl Acetate	108-05-4	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
Vinyl Chloride	75-01-4	<0.483	0.483	mg/kg	05/22/11 00:20		0.97
o-Xylene	95-47-6	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97
m,p-Xylenes	179601-23-1	<0.0965	0.0965	mg/kg	05/22/11 00:20		0.97
Total Xylenes	1330-20-7	<0.0483	0.0483	mg/kg	05/22/11 00:20		0.97

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	89	%	62-123	05/22/11 00:20	
Dibromofluoromethane	1868-53-7	96	%	52-140	05/22/11 00:20	
1,2-Dichloroethane-D4	17060-07-0	105	%	54-133	05/22/11 00:20	
Toluene-D8	2037-26-5	89	%	63-126	05/22/11 00:20	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-27	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-011	Date Collected: May-19-11 14:55	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	06/01/11 19:34		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	06/01/11 19:34		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	06/01/11 19:34	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	06/01/11 19:34		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	06/01/11 19:34		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	06/01/11 19:34	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	06/01/11 19:34		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	06/01/11 19:34		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	06/01/11 19:34		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	06/01/11 19:34		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	06/01/11 19:34		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	06/01/11 19:34		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	06/01/11 19:34		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	06/01/11 19:34		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	06/01/11 19:34		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	06/01/11 19:34		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	06/01/11 19:34		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	06/01/11 19:34		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-27	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-011	Date Collected: May-19-11 14:55	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	06/01/11 19:34		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	06/01/11 19:34		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	06/01/11 19:34		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	06/01/11 19:34	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	06/01/11 19:34		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
3&4-Methylphenol		<0.500	0.500	mg/kg	06/01/11 19:34		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	06/01/11 19:34		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	06/01/11 19:34		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	06/01/11 19:34		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	06/01/11 19:34		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	06/01/11 19:34		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	06/01/11 19:34		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	06/01/11 19:34		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	06/01/11 19:34		1
Phenol	108-95-2	<0.330	0.330	mg/kg	06/01/11 19:34		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	06/01/11 19:34	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	06/01/11 19:34		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	06/01/11 19:34		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	72	%	44-103	06/01/11 19:34	
2-Fluorophenol	367-12-4	61	%	15-111	06/01/11 19:34	
Nitrobenzene-d5	4165-60-0	60	%	45-109	06/01/11 19:34	
Phenol-d6	13127-88-3	68	%	37-105	06/01/11 19:34	
Terphenyl-D14	1718-51-0	86	%	41-118	06/01/11 19:34	
2,4,6-Tribromophenol	118-79-6	53	%	10-124	06/01/11 19:34	
2-Chlorophenol-D4	93951-73-6	65	%	24-110	06/01/11 19:34	
1,2-Dichlorobenzene-D4	2199-69-1	65	%	38-102	06/01/11 19:34	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-28	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-012	Date Collected: May-19-11 15:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 15:10
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.43	1.43	mg/kg	05/22/11 00:46		0.95
Benzene	71-43-2	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Bromobenzene	108-86-1	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Bromochloromethane	74-97-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Bromodichloromethane	75-27-4	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Bromoform	75-25-2	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95
Bromomethane	74-83-9	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
2-Butanone	78-93-3	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
tert-Butylbenzene	98-06-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Sec-Butylbenzene	135-98-8	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
n-Butylbenzene	104-51-8	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Carbon Disulfide	75-15-0	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Carbon Tetrachloride	56-23-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Chlorobenzene	108-90-7	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Chloroethane	75-00-3	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Chloroform	67-66-3	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Chloromethane	74-87-3	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
2-Chlorotoluene	95-49-8	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
4-Chlorotoluene	106-43-4	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,2-Dibromo-3-Chloropropane	96-12-8	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Dibromochloromethane	124-48-1	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,2-Dibromoethane	106-93-4	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Dibromomethane	74-95-3	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,2-Dichlorobenzene	95-50-1	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,3-Dichlorobenzene	541-73-1	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,4-Dichlorobenzene	106-46-7	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Dichlorodifluoromethane	75-71-8	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
1,2-Dichloroethane	107-06-2	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,1-Dichloroethane	75-34-3	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
trans-1,2-dichloroethene	156-60-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
cis-1,2-Dichloroethene	156-59-2	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,1-Dichloroethene	75-35-4	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95
2,2-Dichloropropane	594-20-7	<0.238	0.238	mg/kg	05/22/11 00:46	L1	0.95
1,3-Dichloropropane	142-28-9	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,2-Dichloropropane	78-87-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
trans-1,3-dichloropropene	10061-02-6	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,1-Dichloropropene	563-58-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
cis-1,3-Dichloropropene	10061-01-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Ethylbenzene	100-41-4	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUEST Site

Sample Id: S-051911-MES-28	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-012	Date Collected: May-19-11 15:10	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 15:10
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
2-Hexanone	591-78-6	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Iodomethane (Methyl Iodide)	74-88-4	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Isopropylbenzene	98-82-8	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Naphthalene	91-20-3	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Methylene Chloride	75-09-2	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
4-Methyl-2-Pentanone	108-10-1	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
MTBE	1634-04-4	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
n-Propylbenzene	103-65-1	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Styrene	100-42-5	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,1,1,2-Tetrachloroethane	630-20-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,1,2,2-Tetrachloroethane	79-34-5	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95
Tetrachloroethylene	127-18-4	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Toluene	108-88-3	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95
1,2,4-Trichlorobenzene	120-82-1	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,2,3-Trichlorobenzene	87-61-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,1,2-Trichloroethane	79-00-5	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
1,1,1-Trichloroethane	71-55-6	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Trichloroethene	79-01-6	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
Trichlorofluoromethane	75-69-4	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
1,2,3-Trichloropropane	96-18-4	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,2,4-Trimethylbenzene	95-63-6	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
1,3,5-Trimethylbenzene	108-67-8	<0.238	0.238	mg/kg	05/22/11 00:46		0.95
Vinyl Acetate	108-05-4	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
Vinyl Chloride	75-01-4	<0.475	0.475	mg/kg	05/22/11 00:46		0.95
o-Xylene	95-47-6	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95
m,p-Xylenes	179601-23-1	<0.0951	0.0951	mg/kg	05/22/11 00:46		0.95
Total Xylenes	1330-20-7	<0.0475	0.0475	mg/kg	05/22/11 00:46		0.95

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	86	%	62-123	05/22/11 00:46	
Dibromofluoromethane	1868-53-7	82	%	52-140	05/22/11 00:46	
1,2-Dichloroethane-D4	17060-07-0	96	%	54-133	05/22/11 00:46	
Toluene-D8	2037-26-5	83	%	63-126	05/22/11 00:46	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Sample Id: S-051911-MES-28	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-012	Date Collected: May-19-11 15:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.328	0.328	mg/kg	06/01/11 20:25		1
Acenaphthylene	208-96-8	<0.328	0.328	mg/kg	06/01/11 20:25		1
Anthracene	120-12-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
Azobenzene	103-33-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzo(a)anthracene	56-55-3	<0.328	0.328	mg/kg	06/01/11 20:25	L1	1
Benzo(a)pyrene	50-32-8	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzo(b)fluoranthene	205-99-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzo(g,h,i)perylene	191-24-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzo(k)fluoranthene	207-08-9	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzoic Acid	65-85-0	<4.98	4.98	mg/kg	06/01/11 20:25		1
Benzyl Alcohol	100-51-6	<0.328	0.328	mg/kg	06/01/11 20:25		1
Benzyl Butyl Phthalate	85-68-7	<0.328	0.328	mg/kg	06/01/11 20:25	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
bis(2-chloroethyl) ether	111-44-4	<0.328	0.328	mg/kg	06/01/11 20:25		1
bis(2-chloroisopropyl) ether	108-60-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
4-Bromophenyl-phenylether	101-55-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
di-n-Butyl Phthalate	84-74-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
4-chloro-3-methylphenol	59-50-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
4-Chloroaniline	106-47-8	<0.995	0.995	mg/kg	06/01/11 20:25		1
2-Chloronaphthalene	91-58-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
2-Chlorophenol	95-57-8	<0.328	0.328	mg/kg	06/01/11 20:25		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
Chrysene	218-01-9	<0.328	0.328	mg/kg	06/01/11 20:25		1
Dibenz(a,h)Anthracene	53-70-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
Dibenzofuran	132-64-9	<0.328	0.328	mg/kg	06/01/11 20:25		1
1,2-Dichlorobenzene	95-50-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
1,3-Dichlorobenzene	541-73-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
1,4-Dichlorobenzene	106-46-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
3,3-Dichlorobenzidine	91-94-1	<1.69	1.69	mg/kg	06/01/11 20:25		1
2,4-Dichlorophenol	120-83-2	<0.498	0.498	mg/kg	06/01/11 20:25		1
Diethyl Phthalate	84-66-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
Dimethyl Phthalate	131-11-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
2,4-Dimethylphenol	105-67-9	<0.328	0.328	mg/kg	06/01/11 20:25		1
4,6-dinitro-2-methyl phenol	534-52-1	<1.99	1.99	mg/kg	06/01/11 20:25		1
2,4-Dinitrophenol	51-28-5	<1.99	1.99	mg/kg	06/01/11 20:25		1
2,4-Dinitrotoluene	121-14-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
2,6-Dinitrotoluene	606-20-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
Fluoranthene	206-44-0	<0.328	0.328	mg/kg	06/01/11 20:25		1
Fluorene	86-73-7	<0.328	0.328	mg/kg	06/01/11 20:25		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-28	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-012	Date Collected: May-19-11 15:10	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
Hexachlorobutadiene	87-68-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
Hexachlorocyclopentadiene	77-47-4	<1.99	1.99	mg/kg	06/01/11 20:25		1
Hexachloroethane	67-72-1	<0.328	0.328	mg/kg	06/01/11 20:25		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.328	0.328	mg/kg	06/01/11 20:25		1
Isophorone	78-59-1	<0.328	0.328	mg/kg	06/01/11 20:25	L1	1
2-Methylnaphthalene	91-57-6	<0.328	0.328	mg/kg	06/01/11 20:25		1
2-methylphenol	95-48-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
3&4-Methylphenol		<0.498	0.498	mg/kg	06/01/11 20:25		1
Naphthalene	91-20-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
Nitrobenzene	98-95-3	<0.328	0.328	mg/kg	06/01/11 20:25		1
2-Nitrophenol	88-75-5	<0.328	0.328	mg/kg	06/01/11 20:25		1
4-Nitrophenol	100-02-7	<1.99	1.99	mg/kg	06/01/11 20:25		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.328	0.328	mg/kg	06/01/11 20:25		1
N-Nitrosodiphenylamine	86-30-6	<0.328	0.328	mg/kg	06/01/11 20:25		1
di-n-Octyl Phthalate	117-84-0	<0.328	0.328	mg/kg	06/01/11 20:25		1
Pentachlorophenol	87-86-5	<0.667	0.667	mg/kg	06/01/11 20:25		1
Phenanthrene	85-01-8	<0.328	0.328	mg/kg	06/01/11 20:25		1
Phenol	108-95-2	<0.328	0.328	mg/kg	06/01/11 20:25		1
Pyrene	129-00-0	<0.328	0.328	mg/kg	06/01/11 20:25	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.498	0.498	mg/kg	06/01/11 20:25		1
2,4,6-Trichlorophenol	88-06-2	<0.995	0.995	mg/kg	06/01/11 20:25		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	71	%	44-103	06/01/11 20:25	
2-Fluorophenol	367-12-4	59	%	15-111	06/01/11 20:25	
Nitrobenzene-d5	4165-60-0	53	%	45-109	06/01/11 20:25	
Phenol-d6	13127-88-3	66	%	37-105	06/01/11 20:25	
Terphenyl-D14	1718-51-0	84	%	41-118	06/01/11 20:25	
2,4,6-Tribromophenol	118-79-6	48	%	10-124	06/01/11 20:25	
2-Chlorophenol-D4	93951-73-6	62	%	24-110	06/01/11 20:25	
1,2-Dichlorobenzene-D4	2199-69-1	58	%	38-102	06/01/11 20:25	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-29	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-013	Date Collected: May-19-11 15:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 15:20
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acetone	67-64-1	<1.77	1.77	mg/kg	05/22/11 01:13		1.18
Benzene	71-43-2	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Bromobenzene	108-86-1	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Bromochloromethane	74-97-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Bromodichloromethane	75-27-4	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Bromoform	75-25-2	<0.118	0.118	mg/kg	05/22/11 01:13		1.18
Bromomethane	74-83-9	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
2-Butanone	78-93-3	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
tert-Butylbenzene	98-06-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Sec-Butylbenzene	135-98-8	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
n-Butylbenzene	104-51-8	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Carbon Disulfide	75-15-0	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Carbon Tetrachloride	56-23-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Chlorobenzene	108-90-7	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Chloroethane	75-00-3	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Chloroform	67-66-3	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Chloromethane	74-87-3	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
2-Chlorotoluene	95-49-8	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
4-Chlorotoluene	106-43-4	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
p-Cymene (p-Isopropyltoluene)	99-87-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,2-Dibromo-3-Chloropropane	96-12-8	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Dibromochloromethane	124-48-1	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,2-Dibromoethane	106-93-4	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Dibromomethane	74-95-3	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,2-Dichlorobenzene	95-50-1	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,3-Dichlorobenzene	541-73-1	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,4-Dichlorobenzene	106-46-7	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Dichlorodifluoromethane	75-71-8	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
1,2-Dichloroethane	107-06-2	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,1-Dichloroethane	75-34-3	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
trans-1,2-dichloroethene	156-60-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
cis-1,2-Dichloroethene	156-59-2	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,1-Dichloroethene	75-35-4	<0.118	0.118	mg/kg	05/22/11 01:13		1.18
2,2-Dichloropropane	594-20-7	<0.295	0.295	mg/kg	05/22/11 01:13	L1	1.18
1,3-Dichloropropane	142-28-9	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,2-Dichloropropane	78-87-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
trans-1,3-dichloropropene	10061-02-6	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,1-Dichloropropene	563-58-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
cis-1,3-Dichloropropene	10061-01-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Ethylbenzene	100-41-4	<0.118	0.118	mg/kg	05/22/11 01:13		1.18



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-29	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-013	Date Collected: May-19-11 15:20	

Analytical Method: Volatiles by SW 8260B	Prep Method: SW5035A
Tech: OEM	% Moisture:
Analyst: OEM	Date Prep: May-19-11 15:20
Seq Number: 857319	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobutadiene	87-68-3	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
2-Hexanone	591-78-6	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Iodomethane (Methyl Iodide)	74-88-4	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Naphthalene	91-20-3	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Isopropylbenzene	98-82-8	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Methylene Chloride	75-09-2	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
4-Methyl-2-Pentanone	108-10-1	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
MTBE	1634-04-4	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
n-Propylbenzene	103-65-1	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Styrene	100-42-5	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,1,1,2-Tetrachloroethane	630-20-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,1,2,2-Tetrachloroethane	79-34-5	<0.118	0.118	mg/kg	05/22/11 01:13		1.18
Tetrachloroethylene	127-18-4	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Toluene	108-88-3	<0.118	0.118	mg/kg	05/22/11 01:13		1.18
1,2,4-Trichlorobenzene	120-82-1	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,2,3-Trichlorobenzene	87-61-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,1,2-Trichloroethane	79-00-5	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
1,1,1-Trichloroethane	71-55-6	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Trichloroethene	79-01-6	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
Trichlorofluoromethane	75-69-4	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
1,2,3-Trichloropropane	96-18-4	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,2,4-Trimethylbenzene	95-63-6	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
1,3,5-Trimethylbenzene	108-67-8	<0.295	0.295	mg/kg	05/22/11 01:13		1.18
Vinyl Acetate	108-05-4	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
Vinyl Chloride	75-01-4	<0.590	0.590	mg/kg	05/22/11 01:13		1.18
o-Xylene	95-47-6	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18
m,p-Xylenes	179601-23-1	<0.118	0.118	mg/kg	05/22/11 01:13		1.18
Total Xylenes	1330-20-7	<0.0590	0.0590	mg/kg	05/22/11 01:13		1.18

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	101	%	62-123	05/22/11 01:13	
Dibromofluoromethane	1868-53-7	98	%	52-140	05/22/11 01:13	
1,2-Dichloroethane-D4	17060-07-0	111	%	54-133	05/22/11 01:13	
Toluene-D8	2037-26-5	100	%	63-126	05/22/11 01:13	



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-29	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-013	Date Collected: May-19-11 15:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Acenaphthene	83-32-9	<0.330	0.330	mg/kg	06/01/11 21:18		1
Acenaphthylene	208-96-8	<0.330	0.330	mg/kg	06/01/11 21:18		1
Anthracene	120-12-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
Azobenzene	103-33-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzo(a)anthracene	56-55-3	<0.330	0.330	mg/kg	06/01/11 21:18	L1	1
Benzo(a)pyrene	50-32-8	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzo(b)fluoranthene	205-99-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzo(g,h,i)perylene	191-24-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzo(k)fluoranthene	207-08-9	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzoic Acid	65-85-0	<5.00	5.00	mg/kg	06/01/11 21:18		1
Benzyl Alcohol	100-51-6	<0.330	0.330	mg/kg	06/01/11 21:18		1
Benzyl Butyl Phthalate	85-68-7	<0.330	0.330	mg/kg	06/01/11 21:18	L1	1
bis(2-chloroethoxy) methane	111-91-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
bis(2-chloroethyl) ether	111-44-4	<0.330	0.330	mg/kg	06/01/11 21:18		1
bis(2-chloroisopropyl) ether	108-60-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
bis(2-ethylhexyl) phthalate	117-81-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
4-Bromophenyl-phenylether	101-55-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
di-n-Butyl Phthalate	84-74-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
4-chloro-3-methylphenol	59-50-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
4-Chloroaniline	106-47-8	<1.00	1.00	mg/kg	06/01/11 21:18		1
2-Chloronaphthalene	91-58-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
2-Chlorophenol	95-57-8	<0.330	0.330	mg/kg	06/01/11 21:18		1
4-Chlorophenyl Phenyl Ether	7005-72-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
Chrysene	218-01-9	<0.330	0.330	mg/kg	06/01/11 21:18		1
Dibenz(a,h)Anthracene	53-70-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
Dibenzofuran	132-64-9	<0.330	0.330	mg/kg	06/01/11 21:18		1
1,2-Dichlorobenzene	95-50-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
1,3-Dichlorobenzene	541-73-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
1,4-Dichlorobenzene	106-46-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
3,3-Dichlorobenzidine	91-94-1	<1.70	1.70	mg/kg	06/01/11 21:18		1
2,4-Dichlorophenol	120-83-2	<0.500	0.500	mg/kg	06/01/11 21:18		1
Diethyl Phthalate	84-66-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
Dimethyl Phthalate	131-11-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
2,4-Dimethylphenol	105-67-9	<0.330	0.330	mg/kg	06/01/11 21:18		1
4,6-dinitro-2-methyl phenol	534-52-1	<2.00	2.00	mg/kg	06/01/11 21:18		1
2,4-Dinitrophenol	51-28-5	<2.00	2.00	mg/kg	06/01/11 21:18		1
2,4-Dinitrotoluene	121-14-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
2,6-Dinitrotoluene	606-20-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
Fluoranthene	206-44-0	<0.330	0.330	mg/kg	06/01/11 21:18		1
Fluorene	86-73-7	<0.330	0.330	mg/kg	06/01/11 21:18		1

Project: Phoenix XENCO - Master Project



Certificate of Analytical Results 417239

City of Tucson / Environmental Services, Tucson, AZ HQUST Site

Sample Id: S-051911-MES-29	Matrix: Soil	Date Received: May-19-11 16:30
Lab Sample Id: 417239-013	Date Collected: May-19-11 15:20	

Analytical Method: SVOCs by SW 8270C	Prep Method: SW3545
Tech: CBV	% Moisture:
Analyst: JIH	Date Prep: May-31-11 16:30
Seq Number: 858409	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Hexachlorobenzene	118-74-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
Hexachlorobutadiene	87-68-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
Hexachlorocyclopentadiene	77-47-4	<2.00	2.00	mg/kg	06/01/11 21:18		1
Hexachloroethane	67-72-1	<0.330	0.330	mg/kg	06/01/11 21:18		1
Indeno(1,2,3-c,d)Pyrene	193-39-5	<0.330	0.330	mg/kg	06/01/11 21:18		1
Isophorone	78-59-1	<0.330	0.330	mg/kg	06/01/11 21:18	L1	1
2-Methylnaphthalene	91-57-6	<0.330	0.330	mg/kg	06/01/11 21:18		1
2-methylphenol	95-48-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
3&4-Methylphenol		<0.500	0.500	mg/kg	06/01/11 21:18		1
Naphthalene	91-20-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
Nitrobenzene	98-95-3	<0.330	0.330	mg/kg	06/01/11 21:18		1
2-Nitrophenol	88-75-5	<0.330	0.330	mg/kg	06/01/11 21:18		1
4-Nitrophenol	100-02-7	<2.00	2.00	mg/kg	06/01/11 21:18		1
N-Nitrosodi-n-Propylamine	621-64-7	<0.330	0.330	mg/kg	06/01/11 21:18		1
N-Nitrosodiphenylamine	86-30-6	<0.330	0.330	mg/kg	06/01/11 21:18		1
di-n-Octyl Phthalate	117-84-0	<0.330	0.330	mg/kg	06/01/11 21:18		1
Pentachlorophenol	87-86-5	<0.670	0.670	mg/kg	06/01/11 21:18		1
Phenanthrene	85-01-8	<0.330	0.330	mg/kg	06/01/11 21:18		1
Phenol	108-95-2	<0.330	0.330	mg/kg	06/01/11 21:18		1
Pyrene	129-00-0	<0.330	0.330	mg/kg	06/01/11 21:18	L1	1
1,2,4-Trichlorobenzene	120-82-1	<0.500	0.500	mg/kg	06/01/11 21:18		1
2,4,6-Trichlorophenol	88-06-2	<1.00	1.00	mg/kg	06/01/11 21:18		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
2-Fluorobiphenyl	321-60-8	77	%	44-103	06/01/11 21:18	
2-Fluorophenol	367-12-4	67	%	15-111	06/01/11 21:18	
Nitrobenzene-d5	4165-60-0	69	%	45-109	06/01/11 21:18	
Phenol-d6	13127-88-3	75	%	37-105	06/01/11 21:18	
Terphenyl-D14	1718-51-0	85	%	41-118	06/01/11 21:18	
2,4,6-Tribromophenol	118-79-6	56	%	10-124	06/01/11 21:18	
2-Chlorophenol-D4	93951-73-6	71	%	24-110	06/01/11 21:18	
1,2-Dichlorobenzene-D4	2199-69-1	63	%	38-102	06/01/11 21:18	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BLK

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 19:30	
Dibromofluoromethane	107	69-133	%	05/22/2011 19:30	
1,2-Dichloroethane-D4	104	66-139	%	05/22/2011 19:30	
Toluene-D8	85	70-130	%	05/22/2011 19:30	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BKS

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 19:53	
Dibromofluoromethane	100	69-133	%	05/22/2011 19:53	
1,2-Dichloroethane-D4	100	66-139	%	05/22/2011 19:53	
Toluene-D8	90	70-130	%	05/22/2011 19:53	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603413-1-BSD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 20:15	
Dibromofluoromethane	99	69-133	%	05/22/2011 20:15	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 20:15	
Toluene-D8	90	70-130	%	05/22/2011 20:15	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 S

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	103	70-135	%	05/22/2011 21:01	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:01	
1,2-Dichloroethane-D4	95	66-139	%	05/22/2011 21:01	
Toluene-D8	89	70-130	%	05/22/2011 21:01	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 416950-001 SD

Seq Number: 857169

Prep Date: 05/22/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/22/2011 21:24	
Dibromofluoromethane	97	69-133	%	05/22/2011 21:24	
1,2-Dichloroethane-D4	96	66-139	%	05/22/2011 21:24	
Toluene-D8	90	70-130	%	05/22/2011 21:24	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BLK

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	70-135	%	05/21/2011 17:16	
Dibromofluoromethane	100	69-133	%	05/21/2011 17:16	
1,2-Dichloroethane-D4	98	66-139	%	05/21/2011 17:16	
Toluene-D8	85	70-130	%	05/21/2011 17:16	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BKS

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 19:09	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:09	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:09	
Toluene-D8	85	70-130	%	05/21/2011 19:09	

Method: Volatiles by SW 8260B

Matrix: Water

Prep Method: SW5030C

Sample: 603300-1-BSD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	104	70-135	%	05/21/2011 19:32	
Dibromofluoromethane	103	69-133	%	05/21/2011 19:32	
1,2-Dichloroethane-D4	99	66-139	%	05/21/2011 19:32	
Toluene-D8	84	70-130	%	05/21/2011 19:32	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 S

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	106	70-135	%	05/21/2011 23:19	
Dibromofluoromethane	105	69-133	%	05/21/2011 23:19	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:19	
Toluene-D8	86	70-130	%	05/21/2011 23:19	

Method: Volatiles by SW 8260B

Matrix: Ground Water

Prep Method: SW5030C

Sample: 417227-001 SD

Seq Number: 856979

Prep Date: 05/21/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	105	70-135	%	05/21/2011 23:42	
Dibromofluoromethane	107	69-133	%	05/21/2011 23:42	
1,2-Dichloroethane-D4	102	66-139	%	05/21/2011 23:42	
Toluene-D8	84	70-130	%	05/21/2011 23:42	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BLK

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	98	62-123	%	05/21/2011 22:07	
Dibromofluoromethane	104	52-140	%	05/21/2011 22:07	
1,2-Dichloroethane-D4	114	54-133	%	05/21/2011 22:07	
Toluene-D8	99	63-126	%	05/21/2011 22:07	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BKS

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	85	62-123	%	05/21/2011 22:34	
Dibromofluoromethane	84	52-140	%	05/21/2011 22:34	
1,2-Dichloroethane-D4	95	54-133	%	05/21/2011 22:34	
Toluene-D8	80	63-126	%	05/21/2011 22:34	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603520-1-BSD

Seq Number: 857319

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	101	62-123	%	05/21/2011 23:00	
Dibromofluoromethane	99	52-140	%	05/21/2011 23:00	
1,2-Dichloroethane-D4	117	54-133	%	05/21/2011 23:00	
Toluene-D8	100	63-126	%	05/21/2011 23:00	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417367-002 S

Seq Number: 857319

Prep Date: 05/20/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	62-123	%	05/26/2011 01:48	
Dibromofluoromethane	101	52-140	%	05/26/2011 01:48	
1,2-Dichloroethane-D4	112	54-133	%	05/26/2011 01:48	
Toluene-D8	98	63-126	%	05/26/2011 01:48	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417367-002 SD

Seq Number: 857319

Prep Date: 05/20/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	95	62-123	%	05/26/2011 02:15	
Dibromofluoromethane	92	52-140	%	05/26/2011 02:15	
1,2-Dichloroethane-D4	107	54-133	%	05/26/2011 02:15	
Toluene-D8	93	63-126	%	05/26/2011 02:15	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BLK

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	108	62-123	%	05/24/2011 20:39	
Dibromofluoromethane	100	52-140	%	05/24/2011 20:39	
1,2-Dichloroethane-D4	123	54-133	%	05/24/2011 20:39	
Toluene-D8	104	63-126	%	05/24/2011 20:39	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BKS

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	102	62-123	%	05/24/2011 21:05	
Dibromofluoromethane	103	52-140	%	05/24/2011 21:05	
1,2-Dichloroethane-D4	118	54-133	%	05/24/2011 21:05	
Toluene-D8	100	63-126	%	05/24/2011 21:05	

Method: Volatiles by SW 8260B

Matrix: Solid

Prep Method: SW5035A

Sample: 603743-1-BSD

Seq Number: 857697

Prep Date: 05/17/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	100	62-123	%	05/24/2011 21:31	
Dibromofluoromethane	105	52-140	%	05/24/2011 21:31	
1,2-Dichloroethane-D4	117	54-133	%	05/24/2011 21:31	
Toluene-D8	99	63-126	%	05/24/2011 21:31	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 S

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:23	
Dibromofluoromethane	86	52-140	%	05/25/2011 21:23	
1,2-Dichloroethane-D4	93	54-133	%	05/25/2011 21:23	
Toluene-D8	82	63-126	%	05/25/2011 21:23	

Method: Volatiles by SW 8260B

Matrix: Soil

Prep Method: SW5035A

Sample: 417239-003 SD

Seq Number: 857697

Prep Date: 05/19/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
4-Bromofluorobenzene	84	62-123	%	05/25/2011 21:50	
Dibromofluoromethane	78	52-140	%	05/25/2011 21:50	
1,2-Dichloroethane-D4	87	54-133	%	05/25/2011 21:50	
Toluene-D8	81	63-126	%	05/25/2011 21:50	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BLK

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	71	44-103	%	05/27/2011 11:38	
2-Fluorophenol	65	15-111	%	05/27/2011 11:38	
Nitrobenzene-d5	69	45-109	%	05/27/2011 11:38	
Phenol-d6	69	37-105	%	05/27/2011 11:38	
Terphenyl-D14	87	41-118	%	05/27/2011 11:38	
2,4,6-Tribromophenol	53	10-124	%	05/27/2011 11:38	
2-Chlorophenol-D4	70	24-110	%	05/27/2011 11:38	
1,2-Dichlorobenzene-D4	70	38-102	%	05/27/2011 11:38	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BKS

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	80	44-103	%	05/27/2011 12:29	
2-Fluorophenol	67	15-111	%	05/27/2011 12:29	
Nitrobenzene-d5	76	45-109	%	05/27/2011 12:29	
Phenol-d6	75	37-105	%	05/27/2011 12:29	
Terphenyl-D14	91	41-118	%	05/27/2011 12:29	
2,4,6-Tribromophenol	73	10-124	%	05/27/2011 12:29	
2-Chlorophenol-D4	73	24-110	%	05/27/2011 12:29	
1,2-Dichlorobenzene-D4	74	38-102	%	05/27/2011 12:29	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603702-1-BSD

Seq Number: 858061

Prep Date: 05/25/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	85	44-103	%	05/27/2011 13:21	
2-Fluorophenol	76	15-111	%	05/27/2011 13:21	
Nitrobenzene-d5	85	45-109	%	05/27/2011 13:21	
Phenol-d6	81	37-105	%	05/27/2011 13:21	
Terphenyl-D14	94	41-118	%	05/27/2011 13:21	
2,4,6-Tribromophenol	78	10-124	%	05/27/2011 13:21	
2-Chlorophenol-D4	81	24-110	%	05/27/2011 13:21	
1,2-Dichlorobenzene-D4	81	38-102	%	05/27/2011 13:21	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BLK

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	73	44-103	%	06/01/2011 14:22	
2-Fluorophenol	66	15-111	%	06/01/2011 14:22	
Nitrobenzene-d5	73	45-109	%	06/01/2011 14:22	
Phenol-d6	72	37-105	%	06/01/2011 14:22	
Terphenyl-D14	88	41-118	%	06/01/2011 14:22	
2,4,6-Tribromophenol	59	10-124	%	06/01/2011 14:22	
2-Chlorophenol-D4	72	24-110	%	06/01/2011 14:22	
1,2-Dichlorobenzene-D4	69	38-102	%	06/01/2011 14:22	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BKS

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	84	44-103	%	06/01/2011 15:13	
2-Fluorophenol	72	15-111	%	06/01/2011 15:13	
Nitrobenzene-d5	78	45-109	%	06/01/2011 15:13	
Phenol-d6	80	37-105	%	06/01/2011 15:13	
Terphenyl-D14	91	41-118	%	06/01/2011 15:13	
2,4,6-Tribromophenol	79	10-124	%	06/01/2011 15:13	
2-Chlorophenol-D4	77	24-110	%	06/01/2011 15:13	
1,2-Dichlorobenzene-D4	77	38-102	%	06/01/2011 15:13	

Method: SVOCs by SW 8270C

Matrix: Solid

Prep Method: SW3545

Sample: 603967-1-BSD

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	79	44-103	%	06/01/2011 16:05	
2-Fluorophenol	72	15-111	%	06/01/2011 16:05	
Nitrobenzene-d5	76	45-109	%	06/01/2011 16:05	
Phenol-d6	75	37-105	%	06/01/2011 16:05	
Terphenyl-D14	84	41-118	%	06/01/2011 16:05	
2,4,6-Tribromophenol	71	10-124	%	06/01/2011 16:05	
2-Chlorophenol-D4	74	24-110	%	06/01/2011 16:05	
1,2-Dichlorobenzene-D4	75	38-102	%	06/01/2011 16:05	

Surrogate Recoveries

Project Name: HQUST Site

Work Orders : 417239,

Project ID: 055672.040

Method: SVOCs by SW 8270C

Matrix: Soil

Prep Method: SW3545

Sample: 417367-002 S

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	45	44-103	%	06/02/2011 23:57	
2-Fluorophenol	33	15-111	%	06/02/2011 23:57	
Nitrobenzene-d5	39	45-109	%	06/02/2011 23:57	S8
Phenol-d6	37	37-105	%	06/02/2011 23:57	
Terphenyl-D14	50	41-118	%	06/02/2011 23:57	
2,4,6-Tribromophenol	46	10-124	%	06/02/2011 23:57	
2-Chlorophenol-D4	38	24-110	%	06/02/2011 23:57	
1,2-Dichlorobenzene-D4	41	38-102	%	06/02/2011 23:57	

Method: SVOCs by SW 8270C

Matrix: Soil

Prep Method: SW3545

Sample: 417367-002 SD

Seq Number: 858409

Prep Date: 05/31/2011

Surrogate	% Rec	Limits	Units	Analysis Date	Flag
2-Fluorobiphenyl	71	44-103	%	06/03/2011 00:50	
2-Fluorophenol	62	15-111	%	06/03/2011 00:50	
Nitrobenzene-d5	66	45-109	%	06/03/2011 00:50	
Phenol-d6	71	37-105	%	06/03/2011 00:50	
Terphenyl-D14	80	41-118	%	06/03/2011 00:50	
2,4,6-Tribromophenol	68	10-124	%	06/03/2011 00:50	
2-Chlorophenol-D4	66	24-110	%	06/03/2011 00:50	
1,2-Dichlorobenzene-D4	65	38-102	%	06/03/2011 00:50	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Prep Method: SW5030C

Seq Number: 857169

Matrix: Water

Date Prep: 05/22/2011

MB Sample Id: 603413-1-BLK

LCS Sample Id: 603413-1-BKS

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	39.0	98	37.1	93	55-165	5	28	ug/L	05/22/11 19:53	
Benzene	<0.500	20	19.5	98	20.0	100	70-130	3	20	ug/L	05/22/11 19:53	
Bromobenzene	<1.50	20	17.8	89	19.2	96	70-130	8	20	ug/L	05/22/11 19:53	
Bromochloromethane	<0.500	20	20.4	102	20.4	102	67-125	0	24	ug/L	05/22/11 19:53	
Bromodichloromethane	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/22/11 19:53	
Bromoform	<1.00	20	20.4	102	21.2	106	69-130	4	20	ug/L	05/22/11 19:53	
Bromomethane	<5.00	20	20.9	105	22.7	114	58-138	8	25	ug/L	05/22/11 19:53	
2-Butanone	<5.00	40	43.1	108	40.4	101	58-146	6	27	ug/L	05/22/11 19:53	
n-Butylbenzene	<2.50	20	19.1	96	20.4	102	58-128	7	20	ug/L	05/22/11 19:53	
Sec-Butylbenzene	<1.50	20	19.1	96	20.5	103	61-133	7	20	ug/L	05/22/11 19:53	
tert-Butylbenzene	<2.50	20	19.1	96	20.7	104	65-128	8	20	ug/L	05/22/11 19:53	
Carbon Disulfide	<0.500	20	22.1	111	22.8	114	59-138	3	22	ug/L	05/22/11 19:53	
Carbon Tetrachloride	<0.500	20	20.6	103	21.8	109	57-140	6	21	ug/L	05/22/11 19:53	
Chlorobenzene	<0.500	20	18.5	93	19.4	97	70-130	5	20	ug/L	05/22/11 19:53	
Chloroethane	<4.00	20	17.3	87	17.5	88	60-146	1	24	ug/L	05/22/11 19:53	
Chloroform	<0.500	20	19.7	99	20.0	100	66-128	2	24	ug/L	05/22/11 19:53	
Chloromethane	<5.00	20	18.9	95	18.4	92	47-144	3	26	ug/L	05/22/11 19:53	
2-Chlorotoluene	<1.50	20	18.2	91	19.2	96	70-130	5	20	ug/L	05/22/11 19:53	
4-Chlorotoluene	<2.00	20	18.8	94	19.7	99	70-130	5	28	ug/L	05/22/11 19:53	
4-Isopropyltoluene	<1.50	20	19.6	98	21.3	107	67-135	8	20	ug/L	05/22/11 19:53	
Dibromochloromethane	<0.500	20	20.7	104	21.5	108	70-130	4	20	ug/L	05/22/11 19:53	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.2	101	60-128	1	21	ug/L	05/22/11 19:53	
1,2-Dibromoethane	<0.500	20	20.3	102	20.8	104	70-130	2	20	ug/L	05/22/11 19:53	
Dibromomethane	<0.500	20	20.0	100	20.6	103	70-130	3	23	ug/L	05/22/11 19:53	
1,2-Dichlorobenzene	<1.50	20	19.1	96	20.3	102	70-130	6	20	ug/L	05/22/11 19:53	
1,3-Dichlorobenzene	<1.50	20	19.0	95	20.2	101	70-130	6	20	ug/L	05/22/11 19:53	
1,4-Dichlorobenzene	<1.50	20	17.9	90	19.2	96	70-130	7	20	ug/L	05/22/11 19:53	
Dichlorodifluoromethane	<2.00	20	16.3	82	17.0	85	9-134	4	27	ug/L	05/22/11 19:53	
1,1-Dichloroethane	<0.500	20	20.5	103	20.8	104	66-132	1	20	ug/L	05/22/11 19:53	
1,2-Dichloroethane	<0.500	20	20.5	103	20.1	101	70-130	2	20	ug/L	05/22/11 19:53	
1,1-Dichloroethene	<0.500	20	21.1	106	21.4	107	58-144	1	21	ug/L	05/22/11 19:53	
cis-1,2-Dichloroethene	<0.500	20	17.6	88	17.9	90	67-129	2	24	ug/L	05/22/11 19:53	
trans-1,2-dichloroethene	<0.500	20	19.6	98	20.0	100	63-137	2	21	ug/L	05/22/11 19:53	
1,2-Dichloropropane	<0.500	20	19.4	97	19.9	100	70-130	3	20	ug/L	05/22/11 19:53	
1,3-Dichloropropane	<1.00	20	20.2	101	21.1	106	70-130	4	20	ug/L	05/22/11 19:53	
2,2-Dichloropropane	<0.500	20	21.2	106	21.9	110	60-141	3	24	ug/L	05/22/11 19:53	
1,1-Dichloropropene	<1.00	20	19.7	99	20.5	103	64-135	4	20	ug/L	05/22/11 19:53	
cis-1,3-Dichloropropene	<1.00	20	20.3	102	20.7	104	70-130	2	20	ug/L	05/22/11 19:53	
trans-1,3-dichloropropene	<0.500	20	21.9	110	22.2	111	70-130	1	20	ug/L	05/22/11 19:53	
Ethylbenzene	<2.00	20	18.9	95	19.9	100	70-130	5	20	ug/L	05/22/11 19:53	
Hexachlorobutadiene	<5.00	20	19.1	96	20.6	103	54-145	8	22	ug/L	05/22/11 19:53	
2-Hexanone	<5.00	40	39.4	99	38.7	97	65-129	2	20	ug/L	05/22/11 19:53	
Isopropylbenzene	<2.50	20	21.6	108	22.8	114	70-130	5	20	ug/L	05/22/11 19:53	
Methylene Chloride	<3.00	20	18.3	92	18.6	93	61-127	2	20	ug/L	05/22/11 19:53	
Iodomethane (Methyl Iodide)	<2.00	20	20.3	102	22.0	110	68-128	8	22	ug/L	05/22/11 19:53	
4-Methyl-2-Pentanone	<5.00	40	41.1	103	41.0	103	67-131	0	21	ug/L	05/22/11 19:53	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

MB Sample Id: 603413-1-BLK

Matrix: Water

LCS Sample Id: 603413-1-BKS

Prep Method: SW5030C

Date Prep: 05/22/2011

LCSD Sample Id: 603413-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	19.4	97	19.5	98	70-130	1	21	ug/L	05/22/11 19:53	
Naphthalene	<5.00	20	19.8	99	22.3	112	64-133	12	27	ug/L	05/22/11 19:53	
n-Propylbenzene	<2.00	20	19.0	95	20.3	102	65-128	7	20	ug/L	05/22/11 19:53	
Styrene	<1.00	20	20.4	102	21.6	108	70-130	6	20	ug/L	05/22/11 19:53	
1,1,1,2-Tetrachloroethane	<0.500	20	20.1	101	21.0	105	70-130	4	20	ug/L	05/22/11 19:53	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.7	104	70-130	3	20	ug/L	05/22/11 19:53	
Tetrachloroethylene	<0.500	20	19.4	97	20.7	104	63-127	6	20	ug/L	05/22/11 19:53	
Toluene	<2.00	20	18.3	92	19.6	98	70-130	7	20	ug/L	05/22/11 19:53	
1,2,3-Trichlorobenzene	<5.00	20	19.1	96	21.1	106	66-131	10	27	ug/L	05/22/11 19:53	
1,2,4-Trichlorobenzene	<5.00	20	19.7	99	20.6	103	69-127	4	20	ug/L	05/22/11 19:53	
1,1,1-Trichloroethane	<0.500	20	20.3	102	20.8	104	62-133	2	20	ug/L	05/22/11 19:53	
1,1,2-Trichloroethane	<0.500	20	19.6	98	19.7	99	70-130	1	20	ug/L	05/22/11 19:53	
Trichloroethene	<0.500	20	19.3	97	20.1	101	70-130	4	20	ug/L	05/22/11 19:53	
Trichlorofluoromethane	<2.00	20	21.1	106	22.1	111	45-151	5	22	ug/L	05/22/11 19:53	
1,2,3-Trichloropropane	<1.00	20	20.0	100	20.5	103	70-130	2	20	ug/L	05/22/11 19:53	
1,2,4-Trimethylbenzene	<2.00	20	19.0	95	20.4	102	70-130	7	20	ug/L	05/22/11 19:53	
1,3,5-Trimethylbenzene	<1.50	20	18.8	94	20.0	100	70-130	6	20	ug/L	05/22/11 19:53	
o-Xylene	<1.00	20	19.5	98	20.5	103	70-130	5	20	ug/L	05/22/11 19:53	
m,p-Xylenes	<2.00	40	39.8	100	41.6	104	70-130	4	20	ug/L	05/22/11 19:53	
Vinyl Acetate	<5.00	20	20.6	103	20.2	101	52-142	2	22	ug/L	05/22/11 19:53	
Vinyl Chloride	<0.500	20	18.7	94	18.6	93	43-120	1	25	ug/L	05/22/11 19:53	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<2000	4000	2380	60	2370	59	35-160	0	20	ug/L	05/22/11 21:01	
Benzene	699	2000	2580	94	2680	99	69-130	4	20	ug/L	05/22/11 21:01	
Bromobenzene	<150	2000	1860	93	1930	97	70-130	4	20	ug/L	05/22/11 21:01	
Bromochloromethane	<50.0	2000	1980	99	2040	102	63-119	3	22	ug/L	05/22/11 21:01	
Bromodichloromethane	<50.0	2000	2120	106	2160	108	70-130	2	20	ug/L	05/22/11 21:01	
Bromoform	<100	2000	2110	106	2160	108	57-121	2	20	ug/L	05/22/11 21:01	
Bromomethane	<500	2000	2140	107	2280	114	53-141	6	22	ug/L	05/22/11 21:01	
2-Butanone	<500	4000	3520	88	3360	84	46-136	5	22	ug/L	05/22/11 21:01	
n-Butylbenzene	<250	2000	1920	96	1980	99	65-127	3	20	ug/L	05/22/11 21:01	
Sec-Butylbenzene	<150	2000	1890	95	1980	99	70-130	5	20	ug/L	05/22/11 21:01	
tert-Butylbenzene	<250	2000	1900	95	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Carbon Disulfide	<50.0	2000	2120	106	2220	111	58-145	5	28	ug/L	05/22/11 21:01	
Carbon Tetrachloride	<50.0	2000	2020	101	2160	108	60-152	7	20	ug/L	05/22/11 21:01	
Chlorobenzene	<50.0	2000	1860	93	1960	98	70-130	5	20	ug/L	05/22/11 21:01	
Chloroethane	<400	2000	1720	86	1830	92	59-153	6	20	ug/L	05/22/11 21:01	
Chloroform	<50.0	2000	1880	94	1950	98	65-123	4	22	ug/L	05/22/11 21:01	
Chloromethane	<500	2000	1810	91	1830	92	47-148	1	22	ug/L	05/22/11 21:01	
2-Chlorotoluene	<150	2000	1880	94	1960	98	70-130	4	20	ug/L	05/22/11 21:01	
4-Chlorotoluene	<200	2000	1880	94	1990	100	70-130	6	20	ug/L	05/22/11 21:01	
4-Isopropyltoluene	<150	2000	1990	100	2100	105	70-130	5	20	ug/L	05/22/11 21:01	
Dibromochloromethane	<50.0	2000	2080	104	2140	107	70-130	3	20	ug/L	05/22/11 21:01	
1,2-Dibromo-3-Chloropropane	<200	2000	2060	103	2120	106	50-117	3	22	ug/L	05/22/11 21:01	
1,2-Dibromoethane	<50.0	2000	2010	101	2060	103	67-117	2	20	ug/L	05/22/11 21:01	
Dibromomethane	<50.0	2000	2030	102	2000	100	66-115	1	20	ug/L	05/22/11 21:01	
1,2-Dichlorobenzene	<150	2000	1980	99	2010	101	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichlorobenzene	<150	2000	1940	97	2020	101	70-130	4	20	ug/L	05/22/11 21:01	
1,4-Dichlorobenzene	<150	2000	1860	93	1950	98	70-130	5	20	ug/L	05/22/11 21:01	
Dichlorodifluoromethane	<200	2000	1530	77	1580	79	16-151	3	33	ug/L	05/22/11 21:01	
1,1-Dichloroethane	<50.0	2000	1970	99	2040	102	66-129	3	20	ug/L	05/22/11 21:01	
1,2-Dichloroethane	<50.0	2000	1930	97	1970	99	64-126	2	20	ug/L	05/22/11 21:01	
1,1-Dichloroethene	<50.0	2000	1970	99	2070	104	65-152	5	20	ug/L	05/22/11 21:01	
cis-1,2-Dichloroethene	<50.0	2000	1760	88	1830	92	66-126	4	20	ug/L	05/22/11 21:01	
trans-1,2-dichloroethene	<50.0	2000	1890	95	1950	98	66-135	3	20	ug/L	05/22/11 21:01	
1,2-Dichloropropane	<50.0	2000	1950	98	1980	99	70-130	2	20	ug/L	05/22/11 21:01	
1,3-Dichloropropane	<100	2000	1990	100	2060	103	67-115	3	20	ug/L	05/22/11 21:01	
2,2-Dichloropropane	<50.0	2000	2020	101	2130	107	62-145	5	20	ug/L	05/22/11 21:01	
1,1-Dichloropropene	<100	2000	1920	96	2000	100	72-140	4	20	ug/L	05/22/11 21:01	
cis-1,3-Dichloropropene	<100	2000	2020	101	2090	105	67-122	3	20	ug/L	05/22/11 21:01	
trans-1,3-dichloropropene	<50.0	2000	2180	109	2200	110	70-130	1	20	ug/L	05/22/11 21:01	
Ethylbenzene	271	2000	2170	95	2240	98	70-130	3	20	ug/L	05/22/11 21:01	
Hexachlorobutadiene	<500	2000	1900	95	1950	98	68-143	3	20	ug/L	05/22/11 21:01	
2-Hexanone	<500	4000	3540	89	3470	87	52-122	2	33	ug/L	05/22/11 21:01	
Isopropylbenzene	<250	2000	2150	108	2270	114	70-130	5	20	ug/L	05/22/11 21:01	
Methylene Chloride	<300	2000	1750	88	1800	90	59-121	3	20	ug/L	05/22/11 21:01	
Iodomethane (Methyl Iodide)	<200	2000	2120	106	2210	111	66-127	4	20	ug/L	05/22/11 21:01	
4-Methyl-2-Pentanone	<500	4000	4020	101	4050	101	53-125	1	20	ug/L	05/22/11 21:01	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857169

Parent Sample Id: 416950-001

Matrix: Ground Water

MS Sample Id: 416950-001 S

Prep Method: SW5030C

Date Prep: 05/22/2011

MSD Sample Id: 416950-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<200	2000	1970	99	2020	101	65-127	3	20	ug/L	05/22/11 21:01	
Naphthalene	<500	2000	2270	114	2350	118	54-129	3	26	ug/L	05/22/11 21:01	
n-Propylbenzene	<200	2000	1960	98	2040	102	69-126	4	20	ug/L	05/22/11 21:01	
Styrene	<100	2000	2110	106	2210	111	49-142	5	37	ug/L	05/22/11 21:01	
1,1,1,2-Tetrachloroethane	<50.0	2000	2030	102	2100	105	70-130	3	20	ug/L	05/22/11 21:01	
1,1,2,2-Tetrachloroethane	<50.0	2000	2090	105	2080	104	64-122	0	20	ug/L	05/22/11 21:01	
Tetrachloroethylene	<50.0	2000	1940	97	2010	101	69-130	4	20	ug/L	05/22/11 21:01	
Toluene	1090	2000	3010	96	3150	103	70-130	5	20	ug/L	05/22/11 21:01	
1,2,3-Trichlorobenzene	<500	2000	1990	100	2070	104	61-126	4	24	ug/L	05/22/11 21:01	
1,2,4-Trichlorobenzene	<500	2000	1950	98	2090	105	64-123	7	20	ug/L	05/22/11 21:01	
1,1,1-Trichloroethane	<50.0	2000	1930	97	2030	102	68-136	5	20	ug/L	05/22/11 21:01	
1,1,2-Trichloroethane	<50.0	2000	1930	97	1930	97	65-112	0	20	ug/L	05/22/11 21:01	
Trichloroethene	<50.0	2000	1910	96	2000	100	70-130	5	20	ug/L	05/22/11 21:01	
Trichlorofluoromethane	<200	2000	2030	102	2110	106	53-171	4	20	ug/L	05/22/11 21:01	
1,2,3-Trichloropropane	<100	2000	2040	102	2050	103	58-116	0	20	ug/L	05/22/11 21:01	
1,2,4-Trimethylbenzene	455	2000	2410	98	2480	101	67-128	3	22	ug/L	05/22/11 21:01	
1,3,5-Trimethylbenzene	<150	2000	2070	104	2130	107	70-130	3	20	ug/L	05/22/11 21:01	
o-Xylene	646	2000	2620	99	2730	104	70-130	4	20	ug/L	05/22/11 21:01	
m,p-Xylenes	1330	4000	5270	99	5610	107	70-130	6	20	ug/L	05/22/11 21:01	
Vinyl Acetate	<500	2000	1960	98	2010	101	43-133	3	23	ug/L	05/22/11 21:01	
Vinyl Chloride	<50.0	2000	1790	90	1830	92	46-132	2	21	ug/L	05/22/11 21:01	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.4	76	34.3	86	55-165	12	28	ug/L	05/21/11 19:09	
Benzene	<0.500	20	21.1	106	21.7	109	70-130	3	20	ug/L	05/21/11 19:09	
Bromobenzene	<1.50	20	17.4	87	18.3	92	70-130	5	20	ug/L	05/21/11 19:09	
Bromochloromethane	<0.500	20	22.9	115	23.4	117	67-125	2	24	ug/L	05/21/11 19:09	
Bromodichloromethane	<0.500	20	22.8	114	23.1	116	70-130	1	20	ug/L	05/21/11 19:09	
Bromoform	<1.00	20	20.8	104	20.9	105	69-130	0	20	ug/L	05/21/11 19:09	
Bromomethane	<5.00	20	26.1	131	26.4	132	58-138	1	25	ug/L	05/21/11 19:09	
2-Butanone	<5.00	40	40.9	102	42.1	105	58-146	3	27	ug/L	05/21/11 19:09	
n-Butylbenzene	<2.50	20	17.6	88	18.7	94	58-128	6	20	ug/L	05/21/11 19:09	
Sec-Butylbenzene	<1.50	20	17.7	89	18.8	94	61-133	6	20	ug/L	05/21/11 19:09	
tert-Butylbenzene	<2.50	20	18.5	93	19.2	96	65-128	4	20	ug/L	05/21/11 19:09	
Carbon Disulfide	<0.500	20	25.0	125	25.9	130	59-138	4	22	ug/L	05/21/11 19:09	
Carbon Tetrachloride	<0.500	20	22.2	111	23.0	115	57-140	4	21	ug/L	05/21/11 19:09	
Chlorobenzene	<0.500	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
Chloroethane	<4.00	20	20.0	100	21.5	108	60-146	7	24	ug/L	05/21/11 19:09	
Chloroform	<0.500	20	21.5	108	22.5	113	66-128	5	24	ug/L	05/21/11 19:09	
Chloromethane	<5.00	20	20.5	103	21.1	106	47-144	3	26	ug/L	05/21/11 19:09	
2-Chlorotoluene	<1.50	20	17.2	86	18.3	92	70-130	6	20	ug/L	05/21/11 19:09	
4-Chlorotoluene	<2.00	20	17.6	88	18.6	93	70-130	6	28	ug/L	05/21/11 19:09	
4-Isopropyltoluene	<1.50	20	18.6	93	19.7	99	67-135	6	20	ug/L	05/21/11 19:09	
Dibromochloromethane	<0.500	20	20.9	105	20.8	104	70-130	0	20	ug/L	05/21/11 19:09	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.1	101	20.6	103	60-128	2	21	ug/L	05/21/11 19:09	
1,2-Dibromoethane	<0.500	20	20.0	100	20.1	101	70-130	0	20	ug/L	05/21/11 19:09	
Dibromomethane	<0.500	20	21.7	109	22.0	110	70-130	1	23	ug/L	05/21/11 19:09	
1,2-Dichlorobenzene	<1.50	20	18.3	92	19.0	95	70-130	4	20	ug/L	05/21/11 19:09	
1,3-Dichlorobenzene	<1.50	20	18.3	92	19.4	97	70-130	6	20	ug/L	05/21/11 19:09	
1,4-Dichlorobenzene	<1.50	20	17.2	86	18.1	91	70-130	5	20	ug/L	05/21/11 19:09	
Dichlorodifluoromethane	<2.00	20	19.9	100	20.7	104	9-134	4	27	ug/L	05/21/11 19:09	
1,1-Dichloroethane	<0.500	20	22.7	114	23.3	117	66-132	3	20	ug/L	05/21/11 19:09	
1,2-Dichloroethane	<0.500	20	22.4	112	22.7	114	70-130	1	20	ug/L	05/21/11 19:09	
1,1-Dichloroethene	<0.500	20	22.8	114	23.9	120	58-144	5	21	ug/L	05/21/11 19:09	
cis-1,2-Dichloroethene	<0.500	20	20.1	101	21.4	107	67-129	6	24	ug/L	05/21/11 19:09	
trans-1,2-dichloroethene	<0.500	20	21.6	108	22.6	113	63-137	5	21	ug/L	05/21/11 19:09	
1,2-Dichloropropane	<0.500	20	20.9	105	21.5	108	70-130	3	20	ug/L	05/21/11 19:09	
1,3-Dichloropropane	<1.00	20	20.0	100	20.3	102	70-130	1	20	ug/L	05/21/11 19:09	
2,2-Dichloropropane	<0.500	20	23.5	118	24.2	121	60-141	3	24	ug/L	05/21/11 19:09	
1,1-Dichloropropene	<1.00	20	20.9	105	22.2	111	64-135	6	20	ug/L	05/21/11 19:09	
cis-1,3-Dichloropropene	<1.00	20	22.1	111	22.5	113	70-130	2	20	ug/L	05/21/11 19:09	
trans-1,3-dichloropropene	<0.500	20	21.4	107	21.9	110	70-130	2	20	ug/L	05/21/11 19:09	
Ethylbenzene	<2.00	20	18.9	95	19.6	98	70-130	4	20	ug/L	05/21/11 19:09	
Hexachlorobutadiene	<5.00	20	17.8	89	18.6	93	54-145	4	22	ug/L	05/21/11 19:09	
2-Hexanone	<5.00	40	35.4	89	35.6	89	65-129	1	20	ug/L	05/21/11 19:09	
Isopropylbenzene	<2.50	20	21.2	106	22.0	110	70-130	4	20	ug/L	05/21/11 19:09	
Methylene Chloride	<3.00	20	20.2	101	21.1	106	61-127	4	20	ug/L	05/21/11 19:09	
Iodomethane (Methyl Iodide)	<2.00	20	23.8	119	25.6	128	68-128	7	22	ug/L	05/21/11 19:09	
4-Methyl-2-Pentanone	<5.00	40	44.2	111	43.3	108	67-131	2	21	ug/L	05/21/11 19:09	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

MB Sample Id: 603300-1-BLK

Matrix: Water

LCS Sample Id: 603300-1-BKS

Prep Method: SW5030C

Date Prep: 05/21/2011

LCSD Sample Id: 603300-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	22.2	111	22.6	113	70-130	2	21	ug/L	05/21/11 19:09	
Naphthalene	<5.00	20	19.9	100	20.6	103	64-133	3	27	ug/L	05/21/11 19:09	
n-Propylbenzene	<2.00	20	17.8	89	18.8	94	65-128	5	20	ug/L	05/21/11 19:09	
Styrene	<1.00	20	20.6	103	21.2	106	70-130	3	20	ug/L	05/21/11 19:09	
1,1,1,2-Tetrachloroethane	<0.500	20	20.2	101	20.8	104	70-130	3	20	ug/L	05/21/11 19:09	
1,1,2,2-Tetrachloroethane	<0.500	20	19.8	99	19.9	100	70-130	1	20	ug/L	05/21/11 19:09	
Tetrachloroethylene	<0.500	20	19.8	99	20.5	103	63-127	3	20	ug/L	05/21/11 19:09	
Toluene	<2.00	20	18.7	94	19.1	96	70-130	2	20	ug/L	05/21/11 19:09	
1,2,3-Trichlorobenzene	<5.00	20	18.7	94	19.8	99	66-131	6	27	ug/L	05/21/11 19:09	
1,2,4-Trichlorobenzene	<5.00	20	18.8	94	20.1	101	69-127	7	20	ug/L	05/21/11 19:09	
1,1,1-Trichloroethane	<0.500	20	22.4	112	23.3	117	62-133	4	20	ug/L	05/21/11 19:09	
1,1,2-Trichloroethane	<0.500	20	18.9	95	19.4	97	70-130	3	20	ug/L	05/21/11 19:09	
Trichloroethene	<0.500	20	21.0	105	22.0	110	70-130	5	20	ug/L	05/21/11 19:09	
Trichlorofluoromethane	<2.00	20	23.6	118	24.4	122	45-151	3	22	ug/L	05/21/11 19:09	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.8	99	70-130	1	20	ug/L	05/21/11 19:09	
1,2,4-Trimethylbenzene	<2.00	20	18.4	92	18.9	95	70-130	3	20	ug/L	05/21/11 19:09	
1,3,5-Trimethylbenzene	<1.50	20	17.6	88	18.7	94	70-130	6	20	ug/L	05/21/11 19:09	
o-Xylene	<1.00	20	19.4	97	19.8	99	70-130	2	20	ug/L	05/21/11 19:09	
m,p-Xylenes	<2.00	40	39.2	98	40.4	101	70-130	3	20	ug/L	05/21/11 19:09	
Vinyl Acetate	<5.00	20	20.0	100	20.1	101	52-142	0	22	ug/L	05/21/11 19:09	
Vinyl Chloride	<0.500	20	20.9	105	22.1	111	43-120	6	25	ug/L	05/21/11 19:09	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<20.0	40	30.9	77	28.6	72	35-160	8	20	ug/L	05/21/11 23:19	
Benzene	<0.500	20	20.0	100	19.9	100	69-130	1	20	ug/L	05/21/11 23:19	
Bromobenzene	<1.50	20	16.3	82	16.4	82	70-130	1	20	ug/L	05/21/11 23:19	
Bromochloromethane	<0.500	20	20.6	103	21.3	107	63-119	3	22	ug/L	05/21/11 23:19	
Bromodichloromethane	<0.500	20	21.6	108	21.6	108	70-130	0	20	ug/L	05/21/11 23:19	
Bromoform	<1.00	20	18.9	95	19.4	97	57-121	3	20	ug/L	05/21/11 23:19	
Bromomethane	<5.00	20	24.6	123	24.1	121	53-141	2	22	ug/L	05/21/11 23:19	
2-Butanone	<5.00	40	43.3	108	42.5	106	46-136	2	22	ug/L	05/21/11 23:19	
n-Butylbenzene	<2.50	20	16.8	84	16.9	85	65-127	1	20	ug/L	05/21/11 23:19	
Sec-Butylbenzene	<1.50	20	17.6	88	17.6	88	70-130	0	20	ug/L	05/21/11 23:19	
tert-Butylbenzene	<2.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Carbon Disulfide	<0.500	20	23.8	119	24.8	124	58-145	4	28	ug/L	05/21/11 23:19	
Carbon Tetrachloride	<0.500	20	22.0	110	21.7	109	60-152	1	20	ug/L	05/21/11 23:19	
Chlorobenzene	<0.500	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
Chloroethane	<4.00	20	19.5	98	19.7	99	59-153	1	20	ug/L	05/21/11 23:19	
Chloroform	<0.500	20	21.1	106	21.1	106	65-123	0	22	ug/L	05/21/11 23:19	
Chloromethane	<5.00	20	21.9	110	21.7	109	47-148	1	22	ug/L	05/21/11 23:19	
2-Chlorotoluene	<1.50	20	16.8	84	16.5	83	70-130	2	20	ug/L	05/21/11 23:19	
4-Chlorotoluene	<2.00	20	16.9	85	16.8	84	70-130	1	20	ug/L	05/21/11 23:19	
4-Isopropyltoluene	<1.50	20	18.0	90	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
Dibromochloromethane	<0.500	20	19.3	97	19.1	96	70-130	1	20	ug/L	05/21/11 23:19	
1,2-Dibromo-3-Chloropropane	<2.00	20	20.0	100	20.6	103	50-117	3	22	ug/L	05/21/11 23:19	
1,2-Dibromoethane	<0.500	20	18.9	95	18.8	94	67-117	1	20	ug/L	05/21/11 23:19	
Dibromomethane	<0.500	20	21.0	105	20.7	104	66-115	1	20	ug/L	05/21/11 23:19	
1,2-Dichlorobenzene	<1.50	20	17.4	87	17.4	87	70-130	0	20	ug/L	05/21/11 23:19	
1,3-Dichlorobenzene	<1.50	20	17.2	86	17.0	85	70-130	1	20	ug/L	05/21/11 23:19	
1,4-Dichlorobenzene	<1.50	20	16.5	83	16.2	81	70-130	2	20	ug/L	05/21/11 23:19	
Dichlorodifluoromethane	<2.00	20	18.9	95	19.8	99	16-151	5	33	ug/L	05/21/11 23:19	
1,1-Dichloroethane	<0.500	20	21.7	109	22.0	110	66-129	1	20	ug/L	05/21/11 23:19	
1,2-Dichloroethane	<0.500	20	21.4	107	21.6	108	64-126	1	20	ug/L	05/21/11 23:19	
1,1-Dichloroethene	<0.500	20	22.7	114	23.1	116	65-152	2	20	ug/L	05/21/11 23:19	
cis-1,2-Dichloroethene	<0.500	20	19.3	97	19.6	98	66-126	2	20	ug/L	05/21/11 23:19	
trans-1,2-dichloroethene	<0.500	20	21.4	107	21.5	108	66-135	0	20	ug/L	05/21/11 23:19	
1,2-Dichloropropane	<0.500	20	20.2	101	19.8	99	70-130	2	20	ug/L	05/21/11 23:19	
1,3-Dichloropropane	<1.00	20	19.1	96	18.7	94	67-115	2	20	ug/L	05/21/11 23:19	
2,2-Dichloropropane	<0.500	20	21.2	106	21.4	107	62-145	1	20	ug/L	05/21/11 23:19	
1,1-Dichloropropene	<1.00	20	20.2	101	20.3	102	72-140	0	20	ug/L	05/21/11 23:19	
cis-1,3-Dichloropropene	<1.00	20	20.1	101	20.4	102	67-122	1	20	ug/L	05/21/11 23:19	
trans-1,3-dichloropropene	<0.500	20	20.1	101	20.0	100	70-130	0	20	ug/L	05/21/11 23:19	
Ethylbenzene	<2.00	20	17.7	89	17.7	89	70-130	0	20	ug/L	05/21/11 23:19	
Hexachlorobutadiene	<5.00	20	16.0	80	16.7	84	68-143	4	20	ug/L	05/21/11 23:19	
2-Hexanone	<5.00	40	43.1	108	42.2	106	52-122	2	33	ug/L	05/21/11 23:19	
Isopropylbenzene	<2.50	20	20.2	101	20.3	102	70-130	0	20	ug/L	05/21/11 23:19	
Methylene Chloride	<3.00	20	18.8	94	19.6	98	59-121	4	20	ug/L	05/21/11 23:19	
Iodomethane (Methyl Iodide)	<2.00	20	21.3	107	22.9	115	66-127	7	20	ug/L	05/21/11 23:19	
4-Methyl-2-Pentanone	<5.00	40	53.0	133	51.7	129	53-125	2	20	ug/L	05/21/11 23:19	M1



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 856979

Parent Sample Id: 417227-001

Matrix: Ground Water

MS Sample Id: 417227-001 S

Prep Method: SW5030C

Date Prep: 05/21/2011

MSD Sample Id: 417227-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
MTBE	<2.00	20	21.3	107	21.5	108	65-127	1	20	ug/L	05/21/11 23:19	
Naphthalene	<5.00	20	19.4	97	20.6	103	54-129	6	26	ug/L	05/21/11 23:19	
n-Propylbenzene	<2.00	20	17.7	89	17.4	87	69-126	2	20	ug/L	05/21/11 23:19	
Styrene	<1.00	20	5.07	25	5.20	26	49-142	3	37	ug/L	05/21/11 23:19	M2
1,1,1,2-Tetrachloroethane	<0.500	20	19.0	95	18.3	92	70-130	4	20	ug/L	05/21/11 23:19	
1,1,2,2-Tetrachloroethane	<0.500	20	20.1	101	20.2	101	64-122	0	20	ug/L	05/21/11 23:19	
Tetrachloroethylene	<0.500	20	17.5	88	17.9	90	69-130	2	20	ug/L	05/21/11 23:19	
Toluene	<2.00	20	17.5	88	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
1,2,3-Trichlorobenzene	<5.00	20	16.9	85	17.8	89	61-126	5	24	ug/L	05/21/11 23:19	
1,2,4-Trichlorobenzene	<5.00	20	17.0	85	17.3	87	64-123	2	20	ug/L	05/21/11 23:19	
1,1,1-Trichloroethane	<0.500	20	22.1	111	22.5	113	68-136	2	20	ug/L	05/21/11 23:19	
1,1,2-Trichloroethane	<0.500	20	18.2	91	17.7	89	65-112	3	20	ug/L	05/21/11 23:19	
Trichloroethene	<0.500	20	20.1	101	19.9	100	70-130	1	20	ug/L	05/21/11 23:19	
Trichlorofluoromethane	<2.00	20	22.9	115	23.8	119	53-171	4	20	ug/L	05/21/11 23:19	
1,2,3-Trichloropropane	<1.00	20	19.7	99	19.7	99	58-116	0	20	ug/L	05/21/11 23:19	
1,2,4-Trimethylbenzene	<2.00	20	17.4	87	17.1	86	67-128	2	22	ug/L	05/21/11 23:19	
1,3,5-Trimethylbenzene	<1.50	20	17.2	86	17.3	87	70-130	1	20	ug/L	05/21/11 23:19	
o-Xylene	<1.00	20	18.1	91	17.9	90	70-130	1	20	ug/L	05/21/11 23:19	
m,p-Xylenes	<2.00	40	37.2	93	36.4	91	70-130	2	20	ug/L	05/21/11 23:19	
Vinyl Acetate	<5.00	20	11.4	57	11.9	60	43-133	4	23	ug/L	05/21/11 23:19	
Vinyl Chloride	<0.500	20	21.7	109	21.2	106	46-132	2	21	ug/L	05/21/11 23:19	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Matrix: Solid

Prep Method: SW5035A

Date Prep: 05/17/2011

MB Sample Id: 603743-1-BLK

LCS Sample Id: 603743-1-BKS

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.50	2	2.27	114	2.24	112	52-140	1	23	mg/kg	05/24/11 21:05	
Benzene	<0.0500	1	0.937	94	0.942	94	70-130	1	20	mg/kg	05/24/11 21:05	
Bromobenzene	<0.250	1	0.989	99	1.00	100	70-130	1	20	mg/kg	05/24/11 21:05	
Bromochloromethane	<0.0500	1	0.988	99	0.988	99	70-130	0	20	mg/kg	05/24/11 21:05	
Bromodichloromethane	<0.0500	1	1.18	118	1.16	116	70-130	2	20	mg/kg	05/24/11 21:05	
Bromoform	<0.100	1	1.06	106	1.02	102	64-120	4	20	mg/kg	05/24/11 21:05	
Bromomethane	<0.500	1	1.37	137	1.45	145	21-168	6	56	mg/kg	05/24/11 21:05	
2-Butanone	<0.500	2	1.71	86	1.79	90	70-133	5	23	mg/kg	05/24/11 21:05	
tert-Butylbenzene	<0.250	1	1.09	109	1.09	109	70-130	0	20	mg/kg	05/24/11 21:05	
Sec-Butylbenzene	<0.250	1	1.06	106	1.05	105	70-130	1	20	mg/kg	05/24/11 21:05	
n-Butylbenzene	<0.250	1	1.01	101	1.06	106	70-130	5	20	mg/kg	05/24/11 21:05	
Carbon Disulfide	<0.500	1	0.853	85	0.851	85	43-164	0	38	mg/kg	05/24/11 21:05	
Carbon Tetrachloride	<0.0500	1	1.23	123	1.18	118	70-130	4	20	mg/kg	05/24/11 21:05	
Chlorobenzene	<0.0500	1	1.01	101	0.994	99	70-130	2	20	mg/kg	05/24/11 21:05	
Chloroethane	<0.500	1	0.945	95	1.02	102	35-156	8	48	mg/kg	05/24/11 21:05	
Chloroform	<0.0500	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
Chloromethane	<0.500	1	0.609	61	0.601	60	36-153	1	41	mg/kg	05/24/11 21:05	
2-Chlorotoluene	<0.250	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/24/11 21:05	
4-Chlorotoluene	<0.250	1	1.11	111	1.14	114	70-130	3	20	mg/kg	05/24/11 21:05	
p-Cymene (p-Isopropyltoluene)	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,2-Dibromo-3-Chloropropane	<0.500	1	0.902	90	0.951	95	64-114	5	20	mg/kg	05/24/11 21:05	
Dibromochloromethane	<0.0500	1	1.07	107	1.06	106	70-130	1	20	mg/kg	05/24/11 21:05	
1,2-Dibromoethane	<0.500	1	0.998	100	0.976	98	70-130	2	20	mg/kg	05/24/11 21:05	
Dibromomethane	<0.250	1	1.02	102	1.06	106	70-130	4	20	mg/kg	05/24/11 21:05	
1,2-Dichlorobenzene	<0.0500	1	0.981	98	1.04	104	70-130	6	20	mg/kg	05/24/11 21:05	
1,3-Dichlorobenzene	<0.0500	1	1.02	102	1.01	101	70-130	1	20	mg/kg	05/24/11 21:05	
1,4-Dichlorobenzene	<0.0500	1	1.00	100	1.08	108	70-130	8	20	mg/kg	05/24/11 21:05	
Dichlorodifluoromethane	<0.500	1	0.489	49	0.458	46	12-169	7	49	mg/kg	05/24/11 21:05	
1,2-Dichloroethane	<0.0500	1	1.20	120	1.22	122	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethane	<0.0500	1	1.09	109	1.11	111	70-130	2	20	mg/kg	05/24/11 21:05	
trans-1,2-dichloroethene	<0.0500	1	1.02	102	0.981	98	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,2-Dichloroethene	<0.0500	1	0.962	96	0.970	97	70-130	1	20	mg/kg	05/24/11 21:05	
1,1-Dichloroethene	<0.100	1	1.04	104	1.04	104	59-126	0	21	mg/kg	05/24/11 21:05	
2,2-Dichloropropane	<0.250	1	1.33	133	1.30	130	64-123	2	20	mg/kg	05/24/11 21:05	L1
1,3-Dichloropropane	<0.250	1	1.06	106	1.04	104	70-130	2	20	mg/kg	05/24/11 21:05	
1,2-Dichloropropane	<0.0500	1	0.976	98	0.972	97	70-130	0	20	mg/kg	05/24/11 21:05	
trans-1,3-dichloropropene	<0.0500	1	1.20	120	1.18	118	70-130	2	20	mg/kg	05/24/11 21:05	
1,1-Dichloropropene	<0.250	1	1.04	104	1.00	100	70-130	4	20	mg/kg	05/24/11 21:05	
cis-1,3-Dichloropropene	<0.0500	1	1.07	107	1.05	105	70-130	2	20	mg/kg	05/24/11 21:05	
Ethylbenzene	<0.100	1	1.08	108	1.05	105	70-130	3	20	mg/kg	05/24/11 21:05	
Hexachlorobutadiene	<0.500	1	1.21	121	1.24	124	70-130	2	20	mg/kg	05/24/11 21:05	
2-Hexanone	<0.500	2	1.87	94	1.95	98	70-130	4	20	mg/kg	05/24/11 21:05	
Iodomethane (Methyl Iodide)	<0.500	1	0.963	96	1.00	100	53-157	4	31	mg/kg	05/24/11 21:05	
Isopropylbenzene	<0.250	1	1.12	112	1.12	112	70-130	0	20	mg/kg	05/24/11 21:05	
Naphthalene	<0.250	1	0.935	94	1.01	101	70-130	8	20	mg/kg	05/24/11 21:05	
Methylene Chloride	<0.500	1	0.901	90	0.917	92	70-130	2	20	mg/kg	05/24/11 21:05	



City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

MB Sample Id: 603743-1-BLK

Matrix: Solid

LCS Sample Id: 603743-1-BKS

Prep Method: SW5035A

Date Prep: 05/17/2011

LCSD Sample Id: 603743-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.500	2	1.97	99	2.00	100	70-130	2	20	mg/kg	05/24/11 21:05	
MTBE	<0.250	1	1.05	105	1.04	104	70-130	1	20	mg/kg	05/24/11 21:05	
n-Propylbenzene	<0.250	1	1.07	107	1.09	109	70-130	2	20	mg/kg	05/24/11 21:05	
Styrene	<0.250	1	1.04	104	1.01	101	70-130	3	20	mg/kg	05/24/11 21:05	
1,1,1,2-Tetrachloroethane	<0.250	1	1.11	111	1.11	111	70-130	0	20	mg/kg	05/24/11 21:05	
1,1,2,2-Tetrachloroethane	<0.100	1	0.922	92	0.923	92	70-130	0	20	mg/kg	05/24/11 21:05	
Tetrachloroethylene	<0.0500	1	1.01	101	0.972	97	70-130	4	20	mg/kg	05/24/11 21:05	
Toluene	<0.100	1	0.942	94	0.921	92	70-130	2	20	mg/kg	05/24/11 21:05	
1,2,4-Trichlorobenzene	<0.250	1	1.06	106	1.11	111	70-130	5	20	mg/kg	05/24/11 21:05	
1,2,3-Trichlorobenzene	<0.250	1	1.03	103	1.09	109	70-130	6	20	mg/kg	05/24/11 21:05	
1,1,2-Trichloroethane	<0.0500	1	0.961	96	0.952	95	70-130	1	20	mg/kg	05/24/11 21:05	
1,1,1-Trichloroethane	<0.0500	1	1.18	118	1.18	118	70-130	0	20	mg/kg	05/24/11 21:05	
Trichloroethene	<0.0500	1	1.01	101	1.05	105	70-130	4	20	mg/kg	05/24/11 21:05	
Trichlorofluoromethane	<0.500	1	1.10	110	1.10	110	54-136	0	34	mg/kg	05/24/11 21:05	V1
1,2,3-Trichloropropane	<0.250	1	1.07	107	1.08	108	70-130	1	20	mg/kg	05/24/11 21:05	
1,2,4-Trimethylbenzene	<0.250	1	1.09	109	1.12	112	70-130	3	20	mg/kg	05/24/11 21:05	
1,3,5-Trimethylbenzene	<0.250	1	1.10	110	1.12	112	70-130	2	20	mg/kg	05/24/11 21:05	
Vinyl Acetate	<0.500	1	0.904	90	0.913	91	22-183	1	20	mg/kg	05/24/11 21:05	
Vinyl Chloride	<0.500	1	0.846	85	0.814	81	38-154	4	20	mg/kg	05/24/11 21:05	
o-Xylene	<0.0500	1	1.02	102	0.989	99	70-130	3	20	mg/kg	05/24/11 21:05	
m,p-Xylenes	<0.100	2	2.00	100	1.98	99	70-130	1	20	mg/kg	05/24/11 21:05	



City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Matrix: Solid

Prep Method: SW5035A

Date Prep: 05/19/2011

MB Sample Id: 603520-1-BLK

LCS Sample Id: 603520-1-BKS

LCSD Sample Id: 603520-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.50	2	1.82	91	1.95	98	52-140	7	23	mg/kg	05/21/11 22:34	
Benzene	<0.0500	1	0.924	92	0.940	94	70-130	2	20	mg/kg	05/21/11 22:34	
Bromobenzene	<0.250	1	0.943	94	0.961	96	70-130	2	20	mg/kg	05/21/11 22:34	
Bromochloromethane	<0.0500	1	0.966	97	0.982	98	70-130	2	20	mg/kg	05/21/11 22:34	
Bromodichloromethane	<0.0500	1	1.11	111	1.13	113	70-130	2	20	mg/kg	05/21/11 22:34	
Bromoform	<0.100	1	1.01	101	1.07	107	64-120	6	20	mg/kg	05/21/11 22:34	
Bromomethane	<0.500	1	1.29	129	1.45	145	21-168	12	56	mg/kg	05/21/11 22:34	
2-Butanone	<0.500	2	1.51	76	1.71	86	70-133	12	23	mg/kg	05/21/11 22:34	
tert-Butylbenzene	<0.250	1	1.04	104	1.06	106	70-130	2	20	mg/kg	05/21/11 22:34	
Sec-Butylbenzene	<0.250	1	1.00	100	1.01	101	70-130	1	20	mg/kg	05/21/11 22:34	
n-Butylbenzene	<0.250	1	0.961	96	0.969	97	70-130	1	20	mg/kg	05/21/11 22:34	
Carbon Disulfide	<0.500	1	0.959	96	0.801	80	43-164	18	38	mg/kg	05/21/11 22:34	
Carbon Tetrachloride	<0.0500	1	1.11	111	1.16	116	70-130	4	20	mg/kg	05/21/11 22:34	
Chlorobenzene	<0.0500	1	0.983	98	0.988	99	70-130	1	20	mg/kg	05/21/11 22:34	
Chloroethane	<0.500	1	1.01	101	0.928	93	35-156	8	48	mg/kg	05/21/11 22:34	
Chloroform	<0.0500	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
Chloromethane	<0.500	1	0.584	58	0.580	58	36-153	1	41	mg/kg	05/21/11 22:34	
2-Chlorotoluene	<0.250	1	1.09	109	1.08	108	70-130	1	20	mg/kg	05/21/11 22:34	
4-Chlorotoluene	<0.250	1	1.05	105	1.07	107	70-130	2	20	mg/kg	05/21/11 22:34	
p-Cymene (p-Isopropyltoluene)	<0.250	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
1,2-Dibromo-3-Chloropropane	<0.500	1	0.859	86	0.912	91	64-114	6	20	mg/kg	05/21/11 22:34	
Dibromochloromethane	<0.0500	1	1.03	103	1.04	104	70-130	1	20	mg/kg	05/21/11 22:34	
1,2-Dibromoethane	<0.500	1	0.954	95	1.01	101	70-130	6	20	mg/kg	05/21/11 22:34	
Dibromomethane	<0.250	1	1.00	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
1,2-Dichlorobenzene	<0.0500	1	0.967	97	0.976	98	70-130	1	20	mg/kg	05/21/11 22:34	
1,3-Dichlorobenzene	<0.0500	1	0.966	97	0.951	95	70-130	2	20	mg/kg	05/21/11 22:34	
1,4-Dichlorobenzene	<0.0500	1	0.989	99	1.05	105	70-130	6	20	mg/kg	05/21/11 22:34	
Dichlorodifluoromethane	<0.500	1	0.458	46	0.444	44	12-169	3	49	mg/kg	05/21/11 22:34	
1,2-Dichloroethane	<0.0500	1	1.14	114	1.20	120	70-130	5	20	mg/kg	05/21/11 22:34	
1,1-Dichloroethane	<0.0500	1	1.03	103	1.04	104	70-130	1	20	mg/kg	05/21/11 22:34	
trans-1,2-dichloroethene	<0.0500	1	0.964	96	0.965	97	70-130	0	20	mg/kg	05/21/11 22:34	
cis-1,2-Dichloroethene	<0.0500	1	0.908	91	0.921	92	70-130	1	20	mg/kg	05/21/11 22:34	
1,1-Dichloroethene	<0.100	1	0.949	95	0.981	98	59-126	3	21	mg/kg	05/21/11 22:34	
2,2-Dichloropropane	<0.250	1	1.19	119	1.24	124	64-123	4	20	mg/kg	05/21/11 22:34	L1
1,3-Dichloropropane	<0.250	1	1.02	102	1.07	107	70-130	5	20	mg/kg	05/21/11 22:34	
1,2-Dichloropropane	<0.0500	1	0.950	95	0.977	98	70-130	3	20	mg/kg	05/21/11 22:34	
trans-1,3-dichloropropene	<0.0500	1	1.15	115	1.19	119	70-130	3	20	mg/kg	05/21/11 22:34	
1,1-Dichloropropene	<0.250	1	0.958	96	0.995	100	70-130	4	20	mg/kg	05/21/11 22:34	
cis-1,3-Dichloropropene	<0.0500	1	1.00	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
Ethylbenzene	<0.100	1	1.04	104	1.05	105	70-130	1	20	mg/kg	05/21/11 22:34	
Hexachlorobutadiene	<0.500	1	1.11	111	1.12	112	70-130	1	20	mg/kg	05/21/11 22:34	
2-Hexanone	<0.500	2	1.83	92	1.98	99	70-130	8	20	mg/kg	05/21/11 22:34	
Iodomethane (Methyl Iodide)	<0.500	1	0.956	96	0.971	97	53-157	2	31	mg/kg	05/21/11 22:34	
Isopropylbenzene	<0.250	1	1.07	107	1.10	110	70-130	3	20	mg/kg	05/21/11 22:34	
Naphthalene	<0.250	1	0.890	89	0.981	98	70-130	10	20	mg/kg	05/21/11 22:34	
Methylene Chloride	<0.500	1	0.883	88	0.892	89	70-130	1	20	mg/kg	05/21/11 22:34	



City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

MB Sample Id: 603520-1-BLK

Matrix: Solid

LCS Sample Id: 603520-1-BKS

Prep Method: SW5035A

Date Prep: 05/19/2011

LCSD Sample Id: 603520-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.500	2	1.90	95	1.98	99	70-130	4	20	mg/kg	05/21/11 22:34	
MTBE	<0.250	1	0.999	100	1.02	102	70-130	2	20	mg/kg	05/21/11 22:34	
n-Propylbenzene	<0.250	1	1.02	102	1.04	104	70-130	2	20	mg/kg	05/21/11 22:34	
Styrene	<0.250	1	1.00	100	1.03	103	70-130	3	20	mg/kg	05/21/11 22:34	
1,1,1,2-Tetrachloroethane	<0.250	1	1.09	109	1.08	108	70-130	1	20	mg/kg	05/21/11 22:34	
1,1,2,2-Tetrachloroethane	<0.100	1	0.922	92	0.954	95	70-130	3	20	mg/kg	05/21/11 22:34	
Tetrachloroethylene	<0.0500	1	0.958	96	0.984	98	70-130	3	20	mg/kg	05/21/11 22:34	
Toluene	<0.100	1	0.922	92	0.928	93	70-130	1	20	mg/kg	05/21/11 22:34	
1,2,4-Trichlorobenzene	<0.250	1	1.01	101	1.04	104	70-130	3	20	mg/kg	05/21/11 22:34	
1,2,3-Trichlorobenzene	<0.250	1	0.975	98	1.05	105	70-130	7	20	mg/kg	05/21/11 22:34	
1,1,2-Trichloroethane	<0.0500	1	0.940	94	0.967	97	70-130	3	20	mg/kg	05/21/11 22:34	
1,1,1-Trichloroethane	<0.0500	1	1.10	110	1.13	113	70-130	3	20	mg/kg	05/21/11 22:34	
Trichloroethene	<0.0500	1	0.968	97	1.00	100	70-130	3	20	mg/kg	05/21/11 22:34	
Trichlorofluoromethane	<0.500	1	1.01	101	1.02	102	54-136	1	34	mg/kg	05/21/11 22:34	
1,2,3-Trichloropropane	<0.250	1	1.02	102	1.05	105	70-130	3	20	mg/kg	05/21/11 22:34	
1,2,4-Trimethylbenzene	<0.250	1	1.04	104	1.06	106	70-130	2	20	mg/kg	05/21/11 22:34	
1,3,5-Trimethylbenzene	<0.250	1	1.05	105	1.07	107	70-130	2	20	mg/kg	05/21/11 22:34	
Vinyl Acetate	<0.500	1	0.892	89	0.924	92	22-183	4	20	mg/kg	05/21/11 22:34	
Vinyl Chloride	<0.500	1	0.773	77	0.772	77	38-154	0	20	mg/kg	05/21/11 22:34	
o-Xylene	<0.0500	1	0.992	99	1.01	101	70-130	2	20	mg/kg	05/21/11 22:34	
m,p-Xylenes	<0.100	2	1.98	99	2.00	100	70-130	1	20	mg/kg	05/21/11 22:34	

City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Matrix: Soil

Prep Method: SW5035A

Date Prep: 05/19/2011

Parent Sample Id: 417239-003

MS Sample Id: 417239-003 S

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.60	2.13	<1.60	0	<1.52	0	49-140	NC	35	mg/kg	05/25/11 21:23	M2
Benzene	2.35	1.07	3.87	142	4.01	163	63-115	4	22	mg/kg	05/25/11 21:23	M1
Bromobenzene	<0.267	1.07	0.861	80	0.790	77	57-123	9	25	mg/kg	05/25/11 21:23	
Bromochloromethane	<0.0533	1.07	0.882	82	0.815	80	52-126	8	32	mg/kg	05/25/11 21:23	
Bromodichloromethane	<0.0533	1.07	1.05	98	1.01	99	57-120	4	22	mg/kg	05/25/11 21:23	
Bromoform	<0.107	1.07	0.861	80	0.729	71	53-120	17	24	mg/kg	05/25/11 21:23	
Bromomethane	<0.533	2.13	2.82	132	3.54	174	25-190	23	54	mg/kg	05/25/11 21:23	
2-Butanone	<0.533	2.13	0.902	42	0.754	37	57-137	18	44	mg/kg	05/25/11 21:23	M2
tert-Butylbenzene	<0.267	1.07	3.59	336	4.24	416	49-133	17	28	mg/kg	05/25/11 21:23	M1
Sec-Butylbenzene	0.529	1.07	1.60	100	1.76	121	47-137	10	29	mg/kg	05/25/11 21:23	
n-Butylbenzene	1.34	1.07	2.52	110	3.02	165	35-134	18	30	mg/kg	05/25/11 21:23	M1
Carbon Disulfide	<0.533	2.13	0.795	37	0.721	36	26-156	10	40	mg/kg	05/25/11 21:23	
Carbon Tetrachloride	<0.0533	1.07	0.967	90	0.905	89	47-127	7	26	mg/kg	05/25/11 21:23	
Chlorobenzene	<0.0533	1.07	0.852	80	0.786	77	63-116	8	22	mg/kg	05/25/11 21:23	
Chloroethane	<0.533	2.13	0.835	39	0.743	37	32-145	12	51	mg/kg	05/25/11 21:23	
Chloroform	<0.0533	1.07	1.04	97	0.899	88	51-124	15	34	mg/kg	05/25/11 21:23	
Chloromethane	<0.533	2.13	<0.533	0	<0.508	0	28-142	NC	48	mg/kg	05/25/11 21:23	M2
2-Chlorotoluene	<0.267	1.07	1.45	136	1.32	129	62-119	9	26	mg/kg	05/25/11 21:23	M1
4-Chlorotoluene	<0.267	1.07	1.01	94	0.930	91	65-116	8	24	mg/kg	05/25/11 21:23	
p-Cymene (p-Isopropyltoluene)	<0.267	1.07	1.20	112	1.28	125	44-138	6	28	mg/kg	05/25/11 21:23	
1,2-Dibromo-3-Chloropropane	<0.533	1.07	0.830	78	0.663	65	55-116	22	25	mg/kg	05/25/11 21:23	
Dibromochloromethane	<0.0533	1.07	0.881	82	0.797	78	56-121	10	24	mg/kg	05/25/11 21:23	
1,2-Dibromoethane	<0.533	1.07	0.783	73	0.698	68	58-115	11	22	mg/kg	05/25/11 21:23	
Dibromomethane	<0.267	1.07	0.849	79	0.789	77	59-117	7	23	mg/kg	05/25/11 21:23	
1,2-Dichlorobenzene	<0.0533	1.07	0.898	84	0.814	80	62-117	10	23	mg/kg	05/25/11 21:23	
1,3-Dichlorobenzene	<0.0533	1.07	0.889	83	0.854	84	61-118	4	24	mg/kg	05/25/11 21:23	
1,4-Dichlorobenzene	<0.0533	1.07	0.947	89	0.845	83	64-118	11	23	mg/kg	05/25/11 21:23	
Dichlorodifluoromethane	<0.533	2.13	<0.533	0	<0.508	0	25-143	NC	62	mg/kg	05/25/11 21:23	M2
1,2-Dichloroethane	0.0746	1.07	1.08	94	0.990	90	56-122	9	22	mg/kg	05/25/11 21:23	
1,1-Dichloroethane	<0.0533	1.07	0.973	91	0.818	80	50-126	17	36	mg/kg	05/25/11 21:23	
trans-1,2-dichloroethene	<0.0533	1.07	0.851	80	0.707	69	49-127	18	38	mg/kg	05/25/11 21:23	
cis-1,2-Dichloroethene	<0.0533	1.07	0.852	80	0.721	71	46-129	17	37	mg/kg	05/25/11 21:23	
1,1-Dichloroethene	<0.107	1.07	0.828	77	0.719	70	36-131	14	55	mg/kg	05/25/11 21:23	
2,2-Dichloropropane	<0.267	1.07	1.07	100	0.969	95	41-133	10	32	mg/kg	05/25/11 21:23	
1,3-Dichloropropane	<0.267	1.07	0.869	81	0.788	77	55-117	10	24	mg/kg	05/25/11 21:23	
1,2-Dichloropropane	<0.0533	1.07	0.832	78	0.825	81	64-112	1	21	mg/kg	05/25/11 21:23	
trans-1,3-dichloropropene	<0.0533	1.07	0.957	89	0.856	84	59-127	11	22	mg/kg	05/25/11 21:23	
1,1-Dichloropropene	<0.267	1.07	0.828	77	0.776	76	57-119	6	26	mg/kg	05/25/11 21:23	
cis-1,3-Dichloropropene	<0.0533	1.07	0.851	80	0.802	79	66-115	6	22	mg/kg	05/25/11 21:23	
Ethylbenzene	14.3	1.07	17.3	280	20.3	588	59-117	16	27	mg/kg	05/25/11 21:23	M3
Hexachlorobutadiene	<0.533	1.07	1.05	98	0.954	94	41-148	10	26	mg/kg	05/25/11 21:23	
2-Hexanone	<0.533	2.13	2.46	115	4.02	198	60-128	48	25	mg/kg	05/25/11 21:23	M1R2
Iodomethane (Methyl Iodide)	<0.533	2.13	0.842	40	0.721	36	41-151	15	57	mg/kg	05/25/11 21:23	M2
Isopropylbenzene	1.38	1.07	2.60	114	3.05	164	58-139	16	29	mg/kg	05/25/11 21:23	M1
Naphthalene	3.38	1.07	4.93	145	5.64	222	37-138	13	26	mg/kg	05/25/11 21:23	M3
Methylene Chloride	<0.533	1.07	0.813	76	0.776	76	48-123	5	37	mg/kg	05/25/11 21:23	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857697

Parent Sample Id: 417239-003

Matrix: Soil

MS Sample Id: 417239-003 S

Prep Method: SW5035A

Date Prep: 05/19/2011

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.533	2.13	2.79	131	0.932	46	67-129	100	25	mg/kg	05/25/11 21:23	M1M2R
MTBE	2.93	2.13	4.39	69	3.84	45	62-125	13	24	mg/kg	05/25/11 21:23	M2
n-Propylbenzene	4.53	1.07	6.50	184	8.42	381	51-129	26	29	mg/kg	05/25/11 21:23	M3
Styrene	<0.267	1.07	1.22	114	1.26	124	57-123	3	23	mg/kg	05/25/11 21:23	M1
1,1,1,2-Tetrachloroethane	<0.267	1.07	0.869	81	0.772	76	59-115	12	23	mg/kg	05/25/11 21:23	
1,1,2,2-Tetrachloroethane	<0.107	1.07	0.866	81	0.670	66	45-133	26	29	mg/kg	05/25/11 21:23	
Tetrachloroethylene	<0.0533	1.07	0.835	78	0.751	74	40-125	11	26	mg/kg	05/25/11 21:23	
Toluene	5.74	1.07	7.72	185	8.84	304	50-125	14	28	mg/kg	05/25/11 21:23	M3
1,2,4-Trichlorobenzene	<0.267	1.07	0.916	86	0.823	81	31-136	11	27	mg/kg	05/25/11 21:23	
1,2,3-Trichlorobenzene	<0.267	1.07	0.880	82	0.774	76	29-135	13	33	mg/kg	05/25/11 21:23	
1,1,2-Trichloroethane	<0.0533	1.07	1.23	115	1.23	121	53-117	0	24	mg/kg	05/25/11 21:23	M1
1,1,1-Trichloroethane	<0.0533	1.07	0.985	92	0.888	87	47-125	10	31	mg/kg	05/25/11 21:23	
Trichloroethene	<0.0533	1.07	0.898	84	0.858	84	51-130	5	24	mg/kg	05/25/11 21:23	
Trichlorofluoromethane	<0.533	2.13	0.764	36	0.620	31	36-133	21	45	mg/kg	05/25/11 21:23	M2V1
1,2,3-Trichloropropane	<0.267	1.07	0.886	83	0.786	77	56-120	12	25	mg/kg	05/25/11 21:23	
1,2,4-Trimethylbenzene	17.9	1.07	22.1	393	27.2	912	49-129	21	38	mg/kg	05/25/11 21:23	M3
1,3,5-Trimethylbenzene	5.62	1.07	7.13	141	9.97	426	44-137	33	38	mg/kg	05/25/11 21:23	M3
Vinyl Acetate	<0.533	2.13	<0.533	0	<0.508	0	25-170	NC	50	mg/kg	05/25/11 21:23	M2
Vinyl Chloride	<0.533	2.13	0.567	27	<0.508	0	25-144	200	47	mg/kg	05/25/11 21:23	M2R2
o-Xylene	14.7	1.07	17.9	299	22.2	735	52-127	21	29	mg/kg	05/25/11 21:23	M3
m,p-Xylenes	16.8	2.13	21.1	202	25.7	438	51-126	20	29	mg/kg	05/25/11 21:23	M3



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Matrix: Soil

Prep Method: SW5035A

Date Prep: 05/20/2011

Parent Sample Id: 417367-002

MS Sample Id: 417367-002 S

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acetone	<1.20	1.6	2.19	137	2.42	144	49-140	10	35	mg/kg	05/26/11 01:48	M1
Benzene	<0.0401	0.801	0.789	99	0.787	94	63-115	0	22	mg/kg	05/26/11 01:48	
Bromobenzene	<0.200	0.801	0.843	105	0.831	99	57-123	1	25	mg/kg	05/26/11 01:48	
Bromochloromethane	<0.0401	0.801	0.838	105	0.849	101	52-126	1	32	mg/kg	05/26/11 01:48	
Bromodichloromethane	<0.0401	0.801	0.951	119	0.944	113	57-120	1	22	mg/kg	05/26/11 01:48	
Bromoform	<0.0801	0.801	0.915	114	0.909	108	53-120	1	24	mg/kg	05/26/11 01:48	
Bromomethane	<0.401	0.801	1.81	226	1.72	205	25-190	5	54	mg/kg	05/26/11 01:48	M1
2-Butanone	<0.401	1.6	1.54	96	1.59	95	57-137	3	44	mg/kg	05/26/11 01:48	
tert-Butylbenzene	<0.200	0.801	0.930	116	0.894	107	49-133	4	28	mg/kg	05/26/11 01:48	
Sec-Butylbenzene	<0.200	0.801	0.907	113	0.863	103	47-137	5	29	mg/kg	05/26/11 01:48	
n-Butylbenzene	<0.200	0.801	0.868	108	0.836	100	35-134	4	30	mg/kg	05/26/11 01:48	
Carbon Disulfide	<0.401	0.801	0.770	96	0.653	78	26-156	16	40	mg/kg	05/26/11 01:48	
Carbon Tetrachloride	<0.0401	0.801	0.954	119	0.912	109	47-127	5	26	mg/kg	05/26/11 01:48	
Chlorobenzene	<0.0401	0.801	0.850	106	0.820	98	63-116	4	22	mg/kg	05/26/11 01:48	
Chloroethane	<0.401	0.801	0.758	95	0.824	98	32-145	8	51	mg/kg	05/26/11 01:48	
Chloroform	<0.0401	0.801	0.919	115	0.894	107	51-124	3	34	mg/kg	05/26/11 01:48	
Chloromethane	<0.401	0.801	0.451	56	0.485	58	28-142	7	48	mg/kg	05/26/11 01:48	
2-Chlorotoluene	<0.200	0.801	0.946	118	0.921	110	62-119	3	26	mg/kg	05/26/11 01:48	
4-Chlorotoluene	<0.200	0.801	0.935	117	0.893	107	65-116	5	24	mg/kg	05/26/11 01:48	M1
p-Cymene (p-Isopropyltoluene)	<0.200	0.801	0.930	116	0.892	106	44-138	4	28	mg/kg	05/26/11 01:48	
1,2-Dibromo-3-Chloropropane	<0.401	0.801	0.782	98	0.768	92	55-116	2	25	mg/kg	05/26/11 01:48	
Dibromochloromethane	<0.0401	0.801	0.916	114	0.882	105	56-121	4	24	mg/kg	05/26/11 01:48	
1,2-Dibromoethane	<0.401	0.801	0.845	105	0.814	97	58-115	4	22	mg/kg	05/26/11 01:48	
Dibromomethane	<0.200	0.801	0.875	109	0.862	103	59-117	1	23	mg/kg	05/26/11 01:48	
1,2-Dichlorobenzene	<0.0401	0.801	0.852	106	0.828	99	62-117	3	23	mg/kg	05/26/11 01:48	
1,3-Dichlorobenzene	<0.0401	0.801	0.865	108	0.832	99	61-118	4	24	mg/kg	05/26/11 01:48	
1,4-Dichlorobenzene	<0.0401	0.801	0.880	110	0.842	100	64-118	4	23	mg/kg	05/26/11 01:48	
Dichlorodifluoromethane	<0.401	0.801	0.379	30	0.381	32	25-143	1	62	mg/kg	05/26/11 01:48	
1,2-Dichloroethane	<0.0401	0.801	0.976	122	0.995	119	56-122	2	22	mg/kg	05/26/11 01:48	
1,1-Dichloroethane	<0.0401	0.801	0.869	108	0.861	103	50-126	1	36	mg/kg	05/26/11 01:48	
trans-1,2-dichloroethene	<0.0401	0.801	0.780	97	0.786	94	49-127	1	38	mg/kg	05/26/11 01:48	
cis-1,2-Dichloroethene	<0.0401	0.801	0.793	99	0.778	93	46-129	2	37	mg/kg	05/26/11 01:48	
1,1-Dichloroethene	<0.0801	0.801	0.772	96	0.799	95	36-131	3	55	mg/kg	05/26/11 01:48	
2,2-Dichloropropane	<0.200	0.801	0.996	124	0.963	115	41-133	3	32	mg/kg	05/26/11 01:48	
1,3-Dichloropropane	<0.200	0.801	0.901	112	0.899	107	55-117	0	24	mg/kg	05/26/11 01:48	
1,2-Dichloropropane	<0.0401	0.801	0.831	104	0.789	94	64-112	5	21	mg/kg	05/26/11 01:48	
trans-1,3-dichloropropene	<0.0401	0.801	0.988	123	0.948	113	59-127	4	22	mg/kg	05/26/11 01:48	
1,1-Dichloropropene	<0.200	0.801	0.820	102	0.791	94	57-119	4	26	mg/kg	05/26/11 01:48	
cis-1,3-Dichloropropene	<0.0401	0.801	0.866	108	0.873	104	66-115	1	22	mg/kg	05/26/11 01:48	
Ethylbenzene	<0.0801	0.801	0.898	112	0.869	104	59-117	3	27	mg/kg	05/26/11 01:48	
Hexachlorobutadiene	<0.401	0.801	0.987	123	0.934	111	41-148	6	26	mg/kg	05/26/11 01:48	
2-Hexanone	<0.401	1.6	1.85	116	1.80	107	60-128	3	25	mg/kg	05/26/11 01:48	
Iodomethane (Methyl Iodide)	<0.401	0.801	0.815	102	0.772	92	41-151	5	57	mg/kg	05/26/11 01:48	
Isopropylbenzene	<0.200	0.801	0.957	119	0.917	109	58-139	4	29	mg/kg	05/26/11 01:48	
Naphthalene	<0.200	0.801	0.808	101	0.839	100	37-138	4	26	mg/kg	05/26/11 01:48	
Methylene Chloride	1.53	0.801	2.48	119	2.40	104	48-123	3	37	mg/kg	05/26/11 01:48	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Volatiles by SW 8260B

Seq Number: 857319

Parent Sample Id: 417367-002

Matrix: Soil

MS Sample Id: 417367-002 S

Prep Method: SW5035A

Date Prep: 05/20/2011

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
4-Methyl-2-Pentanone	<0.401	1.6	1.70	106	1.77	105	67-129	4	25	mg/kg	05/26/11 01:48	
MTBE	<0.200	0.801	0.861	107	0.880	105	62-125	2	24	mg/kg	05/26/11 01:48	
n-Propylbenzene	<0.200	0.801	0.919	115	0.869	104	51-129	6	29	mg/kg	05/26/11 01:48	
Styrene	<0.200	0.801	0.881	110	0.857	102	57-123	3	23	mg/kg	05/26/11 01:48	
1,1,1,2-Tetrachloroethane	<0.200	0.801	0.936	117	0.903	108	59-115	4	23	mg/kg	05/26/11 01:48	M1
1,1,2,2-Tetrachloroethane	<0.0801	0.801	0.803	100	0.700	84	45-133	14	29	mg/kg	05/26/11 01:48	
Tetrachloroethylene	<0.0401	0.801	0.857	107	0.816	97	40-125	5	26	mg/kg	05/26/11 01:48	
Toluene	<0.0801	0.801	0.797	100	0.752	90	50-125	6	28	mg/kg	05/26/11 01:48	
1,2,4-Trichlorobenzene	<0.200	0.801	0.874	109	0.861	103	31-136	1	27	mg/kg	05/26/11 01:48	
1,2,3-Trichlorobenzene	<0.200	0.801	0.863	108	0.866	103	29-135	0	33	mg/kg	05/26/11 01:48	
1,1,2-Trichloroethane	<0.0401	0.801	0.831	104	0.799	95	53-117	4	24	mg/kg	05/26/11 01:48	
1,1,1-Trichloroethane	<0.0401	0.801	0.962	120	0.908	108	47-125	6	31	mg/kg	05/26/11 01:48	
Trichloroethene	<0.0401	0.801	0.855	107	0.935	112	51-130	9	24	mg/kg	05/26/11 01:48	
Trichlorofluoromethane	<0.401	0.801	0.723	90	0.746	89	36-133	3	45	mg/kg	05/26/11 01:48	V1
1,2,3-Trichloropropane	<0.200	0.801	0.911	114	0.940	112	56-120	3	25	mg/kg	05/26/11 01:48	
1,2,4-Trimethylbenzene	<0.200	0.801	0.929	116	0.894	107	49-129	4	38	mg/kg	05/26/11 01:48	
1,3,5-Trimethylbenzene	<0.200	0.801	0.951	119	0.897	107	44-137	6	38	mg/kg	05/26/11 01:48	
Vinyl Acetate	<0.401	0.801	0.526	66	0.177	15	25-170	99	50	mg/kg	05/26/11 01:48	M2R2
Vinyl Chloride	<0.401	0.801	0.527	66	0.593	71	25-144	12	47	mg/kg	05/26/11 01:48	
o-Xylene	<0.0401	0.801	0.859	107	0.830	99	52-127	3	29	mg/kg	05/26/11 01:48	
m,p-Xylenes	<0.0801	1.6	1.73	108	1.65	98	51-126	5	29	mg/kg	05/26/11 01:48	



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: SVOCs by SW 8270C

Prep Method: SW3545

Seq Number: 858061

Matrix: Solid

Date Prep: 05/25/2011

MB Sample Id: 603702-1-BLK

LCS Sample Id: 603702-1-BKS

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.330	2	1.67	84	1.80	90	56-106	7	20	mg/kg	05/27/11 12:29	N1
Acenaphthylene	<0.330	2	1.78	89	1.88	94	60-97	5	20	mg/kg	05/27/11 12:29	N1
Anthracene	<0.330	2	1.82	91	1.91	96	55-96	5	24	mg/kg	05/27/11 12:29	N1
Azobenzene	<0.330	2	1.95	98	2.07	104	59-106	6	20	mg/kg	05/27/11 12:29	N1
Benzo(a)anthracene	<0.330	2	1.93	97	2.01	101	65-97	4	20	mg/kg	05/27/11 12:29	N1L1
Benzo(a)pyrene	<0.330	2	1.84	92	1.91	96	64-106	4	20	mg/kg	05/27/11 12:29	N1
Benzo(b)fluoranthene	<0.330	2	1.93	97	2.06	103	59-110	7	23	mg/kg	05/27/11 12:29	N1
Benzo(g,h,i)perylene	<0.330	2	1.88	94	1.96	98	55-120	4	20	mg/kg	05/27/11 12:29	N1
Benzo(k)fluoranthene	<0.330	2	2.01	101	1.98	99	60-116	2	20	mg/kg	05/27/11 12:29	N1
Benzoic Acid	<2.00	4	2.73	69	2.67	67	24-89	2	31	mg/kg	05/27/11 12:29	N1
Benzyl Alcohol	<0.330	2	1.57	79	1.77	89	59-96	12	20	mg/kg	05/27/11 12:29	N1
Benzyl Butyl Phthalate	<0.330	2	2.13	107	2.18	109	63-104	2	20	mg/kg	05/27/11 12:29	L1N1
bis(2-chloroethoxy) methane	<0.330	2	1.59	80	1.79	90	62-95	12	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroethyl) ether	<0.330	2	1.43	72	1.65	83	60-94	14	20	mg/kg	05/27/11 12:29	N1
bis(2-chloroisopropyl) ether	<0.330	2	1.62	81	1.83	92	55-107	12	22	mg/kg	05/27/11 12:29	N1
bis(2-ethylhexyl) phthalate	<0.330	2	2.11	106	2.16	108	61-116	2	20	mg/kg	05/27/11 12:29	N1
4-Bromophenyl-phenylether	<0.330	2	1.65	83	1.71	86	72-119	4	25	mg/kg	05/27/11 12:29	N1
di-n-Butyl Phthalate	<0.330	2	1.88	94	1.98	99	64-111	5	25	mg/kg	05/27/11 12:29	N1
4-chloro-3-methylphenol	<0.330	4	3.24	81	3.40	85	53-110	5	20	mg/kg	05/27/11 12:29	N1
4-Chloroaniline	<1.00	2	1.73	87	1.92	96	33-197	10	20	mg/kg	05/27/11 12:29	N1
2-Chloronaphthalene	<0.330	2	1.62	81	1.76	88	60-93	8	20	mg/kg	05/27/11 12:29	N1
2-Chlorophenol	<0.330	4	2.93	73	3.25	81	55-99	10	20	mg/kg	05/27/11 12:29	N1
4-Chlorophenyl Phenyl Ether	<0.330	2	1.65	83	1.70	85	68-103	3	20	mg/kg	05/27/11 12:29	N1
Chrysene	<0.330	2	1.86	93	1.94	97	64-99	4	20	mg/kg	05/27/11 12:29	N1
Dibenz(a,h)Anthracene	<0.330	2	1.87	94	1.93	97	57-117	3	20	mg/kg	05/27/11 12:29	N1
Dibenzofuran	<0.330	2	1.68	84	1.75	88	62-95	4	20	mg/kg	05/27/11 12:29	N1
1,2-Dichlorobenzene	<0.330	2	1.51	76	1.68	84	58-88	11	20	mg/kg	05/27/11 12:29	N1
1,3-Dichlorobenzene	<0.330	2	1.52	76	1.67	84	58-90	9	20	mg/kg	05/27/11 12:29	N1
1,4-Dichlorobenzene	<0.330	2	1.48	74	1.65	83	59-91	11	20	mg/kg	05/27/11 12:29	N1
3,3-Dichlorobenzidine	<1.70	2	2.08	104	2.22	111	48-159	7	29	mg/kg	05/27/11 12:29	N1
2,4-Dichlorophenol	<0.500	4	2.87	72	3.25	81	53-102	12	20	mg/kg	05/27/11 12:29	N1
Diethyl Phthalate	<0.330	2	1.83	92	1.90	95	66-108	4	20	mg/kg	05/27/11 12:29	N1
Dimethyl Phthalate	<0.330	2	1.79	90	1.89	95	65-103	5	20	mg/kg	05/27/11 12:29	N1
2,4-Dimethylphenol	<0.330	4	2.92	73	3.17	79	52-91	8	20	mg/kg	05/27/11 12:29	N1
4,6-dinitro-2-methyl phenol	<2.00	4	4.02	101	4.23	106	50-119	5	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrophenol	<2.00	4	4.36	109	4.54	114	24-130	4	27	mg/kg	05/27/11 12:29	N1
2,4-Dinitrotoluene	<0.330	2	1.83	92	1.91	96	63-99	4	20	mg/kg	05/27/11 12:29	N1
2,6-Dinitrotoluene	<0.330	2	1.81	91	1.92	96	62-97	6	20	mg/kg	05/27/11 12:29	N1
Fluoranthene	<0.330	2	1.82	91	1.90	95	58-99	4	25	mg/kg	05/27/11 12:29	N1
Fluorene	<0.330	2	1.80	90	1.87	94	63-96	4	20	mg/kg	05/27/11 12:29	N1
Hexachlorobenzene	<0.330	2	1.64	82	1.76	88	61-99	7	25	mg/kg	05/27/11 12:29	N1
Hexachlorobutadiene	<0.330	2	1.43	72	1.65	83	52-91	14	20	mg/kg	05/27/11 12:29	N1
Hexachlorocyclopentadiene	<1.00	2	1.43	72	1.63	82	43-110	6	20	mg/kg	05/27/11 12:29	N1
Hexachloroethane	<0.330	2	1.49	75	1.65	83	57-95	10	20	mg/kg	05/27/11 12:29	N1
Indeno(1,2,3-c,d)Pyrene	<0.330	2	1.95	98	2.02	101	60-117	4	20	mg/kg	05/27/11 12:29	N1
Isophorone	<0.330	2	2.02	101	2.19	110	53-90	8	20	mg/kg	05/27/11 12:29	L1N1



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUEST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858061

MB Sample Id: 603702-1-BLK

Matrix: Solid

LCS Sample Id: 603702-1-BKS

Prep Method: SW3545

Date Prep: 05/25/2011

LCSD Sample Id: 603702-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.330	2	1.58	79	1.73	87	59-94	9	20	mg/kg	05/27/11 12:29	N1
2-methylphenol	<0.330	4	2.95	74	3.33	83	52-101	12	20	mg/kg	05/27/11 12:29	N1
3&4-Methylphenol	<0.500	4	2.78	70	3.10	78	55-107	11	20	mg/kg	05/27/11 12:29	N1
Naphthalene	<0.330	2	1.55	78	1.73	87	60-92	11	20	mg/kg	05/27/11 12:29	N1
Nitrobenzene	<0.330	2	1.59	80	1.74	87	59-100	9	20	mg/kg	05/27/11 12:29	N1
2-Nitrophenol	<0.330	4	2.99	75	3.30	83	52-99	10	20	mg/kg	05/27/11 12:29	N1
4-Nitrophenol	<2.00	4	3.76	94	3.86	97	51-121	3	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodi-n-Propylamine	<0.330	2	1.78	89	1.96	98	55-121	10	20	mg/kg	05/27/11 12:29	N1
N-Nitrosodiphenylamine	<0.330	2	2.41	121	2.55	128	17-149	6	53	mg/kg	05/27/11 12:29	N1
di-n-Octyl Phthalate	<0.330	2	2.10	105	2.16	108	62-123	3	22	mg/kg	05/27/11 12:29	N1
Pentachlorophenol	<0.670	4	3.33	83	3.46	87	52-90	4	23	mg/kg	05/27/11 12:29	N1
Phenanthrene	<0.330	2	1.77	89	1.88	94	62-100	6	24	mg/kg	05/27/11 12:29	N1
Phenol	<0.330	4	2.84	71	3.28	82	54-101	14	20	mg/kg	05/27/11 12:29	N1
Pyrene	<0.330	2	2.00	100	2.03	102	65-99	1	20	mg/kg	05/27/11 12:29	L1N1
1,2,4-Trichlorobenzene	<0.500	2	1.59	80	1.78	89	58-96	11	20	mg/kg	05/27/11 12:29	N1
2,4,6-Trichlorophenol	<1.00	4	2.92	73	3.13	78	56-101	7	20	mg/kg	05/27/11 12:29	N1



City of Tucson / Environmental Services, Tucson, AZ

HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

MB Sample Id: 603967-1-BLK

Matrix: Solid

LCS Sample Id: 603967-1-BKS

Prep Method: SW3545

Date Prep: 05/31/2011

LCSD Sample Id: 603967-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.330	2	2.01	101	1.65	83	56-106	20	20	mg/kg	06/01/11 15:13	
Acenaphthylene	<0.330	2	1.88	94	1.76	88	60-97	7	20	mg/kg	06/01/11 15:13	
Anthracene	<0.330	2	1.90	95	1.76	88	55-96	8	24	mg/kg	06/01/11 15:13	
Azobenzene	<0.330	2	2.01	101	1.85	93	59-106	8	20	mg/kg	06/01/11 15:13	
Benzo(a)anthracene	<0.330	2	1.99	100	1.82	91	65-97	9	20	mg/kg	06/01/11 15:13	L1
Benzo(a)pyrene	<0.330	2	1.87	94	1.72	86	64-106	8	20	mg/kg	06/01/11 15:13	
Benzo(b)fluoranthene	<0.330	2	1.92	96	1.86	93	59-110	3	23	mg/kg	06/01/11 15:13	
Benzo(g,h,i)perylene	<0.330	2	2.02	101	1.80	90	55-120	12	20	mg/kg	06/01/11 15:13	
Benzo(k)fluoranthene	<0.330	2	2.07	104	1.85	93	60-116	11	20	mg/kg	06/01/11 15:13	
Benzoic Acid	<2.00	4	2.34	59	2.60	65	24-89	10	31	mg/kg	06/01/11 15:13	
Benzyl Alcohol	<0.330	2	1.69	85	1.66	83	59-96	2	20	mg/kg	06/01/11 15:13	
Benzyl Butyl Phthalate	<0.330	2	2.10	105	1.94	97	63-104	8	20	mg/kg	06/01/11 15:13	L1
bis(2-chloroethoxy) methane	<0.330	2	1.62	81	1.58	79	62-95	3	20	mg/kg	06/01/11 15:13	
bis(2-chloroethyl) ether	<0.330	2	1.50	75	1.49	75	60-94	1	20	mg/kg	06/01/11 15:13	
bis(2-chloroisopropyl) ether	<0.330	2	1.67	84	1.63	82	55-107	2	22	mg/kg	06/01/11 15:13	
bis(2-ethylhexyl) phthalate	<0.330	2	2.02	101	1.85	93	61-116	9	20	mg/kg	06/01/11 15:13	
4-Bromophenyl-phenylether	<0.330	2	1.66	83	1.56	78	72-119	6	25	mg/kg	06/01/11 15:13	
di-n-Butyl Phthalate	<0.330	2	1.93	97	1.75	88	64-111	10	25	mg/kg	06/01/11 15:13	
4-chloro-3-methylphenol	<0.330	4	3.37	84	3.16	79	53-110	6	20	mg/kg	06/01/11 15:13	
4-Chloroaniline	<1.00	2	1.82	91	1.77	89	33-197	3	20	mg/kg	06/01/11 15:13	
2-Chloronaphthalene	<0.330	2	1.69	85	1.62	81	60-93	4	20	mg/kg	06/01/11 15:13	
2-Chlorophenol	<0.330	4	3.01	75	2.93	73	55-99	3	20	mg/kg	06/01/11 15:13	
4-Chlorophenyl Phenyl Ether	<0.330	2	1.73	87	1.58	79	68-103	9	20	mg/kg	06/01/11 15:13	
Chrysene	<0.330	2	1.93	97	1.77	89	64-99	9	20	mg/kg	06/01/11 15:13	
Dibenz(a,h)Anthracene	<0.330	2	1.98	99	1.78	89	57-117	11	20	mg/kg	06/01/11 15:13	
Dibenzofuran	<0.330	2	1.77	89	1.66	83	62-95	6	20	mg/kg	06/01/11 15:13	
1,2-Dichlorobenzene	<0.330	2	1.57	79	1.55	78	58-88	1	20	mg/kg	06/01/11 15:13	
1,3-Dichlorobenzene	<0.330	2	1.58	79	1.57	79	58-90	1	20	mg/kg	06/01/11 15:13	
1,4-Dichlorobenzene	<0.330	2	1.55	78	1.51	76	59-91	3	20	mg/kg	06/01/11 15:13	
3,3-Dichlorobenzidine	<1.70	2	2.28	114	2.15	108	48-159	6	29	mg/kg	06/01/11 15:13	
2,4-Dichlorophenol	<0.500	4	3.01	75	2.87	72	53-102	5	20	mg/kg	06/01/11 15:13	
Diethyl Phthalate	<0.330	2	1.88	94	1.71	86	66-108	9	20	mg/kg	06/01/11 15:13	
Dimethyl Phthalate	<0.330	2	1.91	96	1.74	87	65-103	9	20	mg/kg	06/01/11 15:13	
2,4-Dimethylphenol	<0.330	4	3.04	76	2.89	72	52-91	5	20	mg/kg	06/01/11 15:13	
4,6-dinitro-2-methyl phenol	<2.00	4	3.78	95	3.79	95	50-119	0	27	mg/kg	06/01/11 15:13	
2,4-Dinitrophenol	<2.00	4	3.61	90	3.93	98	24-130	8	27	mg/kg	06/01/11 15:13	
2,4-Dinitrotoluene	<0.330	2	1.95	98	1.75	88	63-99	11	20	mg/kg	06/01/11 15:13	
2,6-Dinitrotoluene	<0.330	2	1.94	97	1.80	90	62-97	7	20	mg/kg	06/01/11 15:13	
Fluoranthene	<0.330	2	1.88	94	1.73	87	58-99	8	25	mg/kg	06/01/11 15:13	
Fluorene	<0.330	2	1.89	95	1.73	87	63-96	9	20	mg/kg	06/01/11 15:13	
Hexachlorobenzene	<0.330	2	1.69	85	1.56	78	61-99	8	25	mg/kg	06/01/11 15:13	
Hexachlorobutadiene	<0.330	2	1.44	72	1.42	71	52-91	1	20	mg/kg	06/01/11 15:13	
Hexachlorocyclopentadiene	<1.00	2	1.64	82	1.56	75	43-110	5	20	mg/kg	06/01/11 15:13	
Hexachloroethane	<0.330	2	1.54	77	1.51	76	57-95	2	20	mg/kg	06/01/11 15:13	
Indeno(1,2,3-c,d)Pyrene	<0.330	2	2.07	104	1.86	93	60-117	11	20	mg/kg	06/01/11 15:13	
Isophorone	<0.330	2	2.12	106	1.97	99	53-90	7	20	mg/kg	06/01/11 15:13	L1



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

MB Sample Id: 603967-1-BLK

Matrix: Solid

LCS Sample Id: 603967-1-BKS

Prep Method: SW3545

Date Prep: 05/31/2011

LCSD Sample Id: 603967-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.330	2	1.62	81	1.54	77	59-94	5	20	mg/kg	06/01/11 15:13	
2-methylphenol	<0.330	4	3.16	79	3.06	77	52-101	3	20	mg/kg	06/01/11 15:13	
3&4-Methylphenol	<0.500	4	2.95	74	2.86	72	55-107	3	20	mg/kg	06/01/11 15:13	
Naphthalene	<0.330	2	1.60	80	1.54	77	60-92	4	20	mg/kg	06/01/11 15:13	
Nitrobenzene	<0.330	2	1.58	79	1.54	77	59-100	3	20	mg/kg	06/01/11 15:13	
2-Nitrophenol	<0.330	4	3.11	78	2.96	74	52-99	5	20	mg/kg	06/01/11 15:13	
4-Nitrophenol	<2.00	4	4.18	105	3.84	96	51-121	8	20	mg/kg	06/01/11 15:13	
N-Nitrosodi-n-Propylamine	<0.330	2	1.85	93	1.78	89	55-121	4	20	mg/kg	06/01/11 15:13	
N-Nitrosodiphenylamine	<0.330	2	2.54	127	2.34	117	17-149	8	53	mg/kg	06/01/11 15:13	
di-n-Octyl Phthalate	<0.330	2	2.03	102	1.89	95	62-123	7	22	mg/kg	06/01/11 15:13	
Pentachlorophenol	<0.670	4	3.44	86	3.23	81	52-90	6	23	mg/kg	06/01/11 15:13	
Phenanthrene	<0.330	2	1.86	93	1.70	85	62-100	9	24	mg/kg	06/01/11 15:13	
Phenol	<0.330	4	3.15	79	3.00	75	54-101	5	20	mg/kg	06/01/11 15:13	
Pyrene	<0.330	2	2.00	100	1.83	92	65-99	9	20	mg/kg	06/01/11 15:13	L1
1,2,4-Trichlorobenzene	<0.500	2	1.62	81	1.57	79	58-96	3	20	mg/kg	06/01/11 15:13	
2,4,6-Trichlorophenol	<1.00	4	3.12	78	2.96	74	56-101	5	20	mg/kg	06/01/11 15:13	



City of Tucson / Environmental Services, Tucson, AZ

HQUEST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

Parent Sample Id: 417367-002

Matrix: Soil

MS Sample Id: 417367-002 S

Prep Method: SW3545

Date Prep: 05/31/2011

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Acenaphthene	<0.657	1.99	0.958	48	1.48	74	23-102	43	20	mg/kg	06/02/11 23:57	R5
Acenaphthylene	<0.657	1.99	0.921	46	1.48	74	28-97	47	20	mg/kg	06/02/11 23:57	R5
Anthracene	<0.657	1.99	0.999	50	1.54	77	22-94	43	20	mg/kg	06/02/11 23:57	R5
Azobenzene	<0.657	1.99	0.990	50	1.53	77	22-105	43	20	mg/kg	06/02/11 23:57	R5
Benzo(a)anthracene	<0.657	1.99	1.09	55	1.60	80	17-100	38	20	mg/kg	06/02/11 23:57	R5
Benzo(a)pyrene	<0.657	1.99	1.01	51	1.49	75	22-111	38	20	mg/kg	06/02/11 23:57	R5
Benzo(b)fluoranthene	<0.657	1.99	0.920	46	1.67	84	22-104	58	20	mg/kg	06/02/11 23:57	R5
Benzo(g,h,i)perylene	<0.657	1.99	0.987	50	1.51	76	22-134	42	20	mg/kg	06/02/11 23:57	R5
Benzo(k)fluoranthene	<0.657	1.99	1.13	57	1.62	81	22-109	36	20	mg/kg	06/02/11 23:57	R5
Benzoic Acid	<9.95	5.97	<9.95	0	<9.95	0	7-175	NC	20	mg/kg	06/02/11 23:57	M2
Benzyl Alcohol	<0.657	1.99	0.793	40	1.42	71	44-92	57	20	mg/kg	06/02/11 23:57	M2R2
Benzyl Butyl Phthalate	<0.657	1.99	1.14	57	1.70	85	18-109	39	25	mg/kg	06/02/11 23:57	R5
bis(2-chloroethoxy) methane	<0.657	1.99	0.848	43	1.41	71	38-91	50	20	mg/kg	06/02/11 23:57	R5
bis(2-chloroethyl) ether	<0.657	1.99	0.759	38	1.25	63	38-91	49	20	mg/kg	06/02/11 23:57	R5
bis(2-chloroisopropyl) ether	<0.657	1.99	0.866	44	1.35	68	25-113	44	20	mg/kg	06/02/11 23:57	R5
bis(2-ethylhexyl) phthalate	<0.657	1.99	1.16	58	1.74	87	17-134	40	20	mg/kg	06/02/11 23:57	R5
4-Bromophenyl-phenylether	<0.657	1.99	0.863	43	1.38	69	22-121	46	20	mg/kg	06/02/11 23:57	R5
di-n-Butyl Phthalate	<0.657	1.99	1.00	50	1.52	76	17-115	41	20	mg/kg	06/02/11 23:57	R5
4-chloro-3-methylphenol	<0.657	3.98	1.60	40	2.77	70	39-98	54	20	mg/kg	06/02/11 23:57	R5
4-Chloroaniline	<1.00	1.99	1.10	55	1.67	84	33-247	42	20	mg/kg	06/02/11 23:57	R5
2-Chloronaphthalene	<0.657	1.99	0.925	46	1.44	72	27-95	44	20	mg/kg	06/02/11 23:57	R5
2-Chlorophenol	<0.657	3.98	1.50	38	2.54	64	46-85	51	20	mg/kg	06/02/11 23:57	M2R2
4-Chlorophenyl Phenyl Ether	<0.657	1.99	0.931	47	1.42	71	22-109	42	20	mg/kg	06/02/11 23:57	R5
Chrysene	<0.657	1.99	1.05	53	1.58	79	22-100	40	20	mg/kg	06/02/11 23:57	R5
Dibenz(a,h)Anthracene	<0.657	1.99	0.993	50	1.50	75	22-129	41	20	mg/kg	06/02/11 23:57	R5
Dibenzofuran	<0.657	1.99	0.951	48	1.46	73	25-98	42	20	mg/kg	06/02/11 23:57	R5
1,2-Dichlorobenzene	<0.657	1.99	0.836	42	1.32	66	33-88	45	20	mg/kg	06/02/11 23:57	R5
1,3-Dichlorobenzene	<0.657	1.99	0.808	41	1.26	63	32-89	44	20	mg/kg	06/02/11 23:57	R5
1,4-Dichlorobenzene	<0.657	1.99	0.823	41	1.29	65	33-91	44	20	mg/kg	06/02/11 23:57	R5
3,3-Dichlorobenzidine	<1.00	1.99	1.35	68	1.89	98	7-161	33	20	mg/kg	06/02/11 23:57	R5
2,4-Dichlorophenol	<0.995	3.98	1.54	39	2.61	66	41-88	52	20	mg/kg	06/02/11 23:57	M2R2
Diethyl Phthalate	<0.657	1.99	0.952	48	1.49	75	26-111	44	20	mg/kg	06/02/11 23:57	R5
Dimethyl Phthalate	<0.657	1.99	0.892	45	1.45	73	35-100	48	20	mg/kg	06/02/11 23:57	R5
2,4-Dimethylphenol	<0.657	3.98	1.55	39	2.66	67	9-84	53	20	mg/kg	06/02/11 23:57	R5
4,6-dinitro-2-methyl phenol	<1.00	3.98	1.84	46	2.86	72	50-146	44	20	mg/kg	06/02/11 23:57	M2R2
2,4-Dinitrophenol	<2.00	3.98	2.14	54	2.41	61	50-161	12	20	mg/kg	06/02/11 23:57	
2,4-Dinitrotoluene	<0.657	1.99	0.827	42	1.36	68	33-97	49	20	mg/kg	06/02/11 23:57	R5
2,6-Dinitrotoluene	<0.657	1.99	0.925	46	1.48	74	32-96	46	20	mg/kg	06/02/11 23:57	R5
Fluoranthene	<0.657	1.99	1.00	50	1.50	75	19-99	40	20	mg/kg	06/02/11 23:57	R5
Fluorene	<0.657	1.99	1.02	51	1.56	78	24-101	42	20	mg/kg	06/02/11 23:57	R5
Hexachlorobenzene	<0.657	1.99	0.891	45	1.39	70	18-102	44	20	mg/kg	06/02/11 23:57	R5
Hexachlorobutadiene	<0.657	1.99	0.816	41	1.26	63	21-93	43	20	mg/kg	06/02/11 23:57	R5
Hexachlorocyclopentadiene	0.607	1.99	0.607	31	0.700	35	3-104	12	20	mg/kg	06/02/11 23:57	
Hexachloroethane	<0.657	1.99	0.775	39	1.16	58	28-93	40	20	mg/kg	06/02/11 23:57	R5
Indeno(1,2,3-c,d)Pyrene	<0.657	1.99	1.03	52	1.59	80	22-130	43	20	mg/kg	06/02/11 23:57	R5
Isophorone	<0.657	1.99	1.00	50	1.64	82	28-88	48	20	mg/kg	06/02/11 23:57	R5



City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: SVOCs by SW 8270C

Seq Number: 858409

Parent Sample Id: 417367-002

Matrix: Soil

MS Sample Id: 417367-002 S

Prep Method: SW3545

Date Prep: 05/31/2011

MSD Sample Id: 417367-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
2-Methylnaphthalene	<0.657	1.99	0.937	47	1.46	73	28-97	44	20	mg/kg	06/02/11 23:57	R5
2-methylphenol	<0.657	3.98	1.57	39	2.72	68	15-89	54	20	mg/kg	06/02/11 23:57	R5
3&4-Methylphenol	<0.995	3.98	1.46	37	2.55	64	25-97	54	20	mg/kg	06/02/11 23:57	R5
Naphthalene	<0.657	1.99	0.918	46	1.45	73	31-92	45	20	mg/kg	06/02/11 23:57	R5
Nitrobenzene	<0.657	1.99	0.787	40	1.35	68	41-94	53	20	mg/kg	06/02/11 23:57	M2R2
2-Nitrophenol	<0.657	3.98	1.35	34	2.59	65	44-87	63	20	mg/kg	06/02/11 23:57	M2R2
4-Nitrophenol	<1.00	3.98	1.47	37	2.54	64	50-148	53	20	mg/kg	06/02/11 23:57	M2R2
N-Nitrosodi-n-Propylamine	<0.657	1.99	0.816	41	1.38	69	29-121	51	20	mg/kg	06/02/11 23:57	R5
N-Nitrosodiphenylamine	<0.657	1.99	1.30	65	2.05	103	17-132	45	20	mg/kg	06/02/11 23:57	R5
di-n-Octyl Phthalate	<0.657	1.99	1.15	58	1.70	85	17-117	39	20	mg/kg	06/02/11 23:57	R5
Pentachlorophenol	<1.33	3.98	1.50	38	2.61	66	12-111	54	20	mg/kg	06/02/11 23:57	R5
Phenanthrene	<0.657	1.99	0.975	49	1.53	77	22-103	44	20	mg/kg	06/02/11 23:57	R5
Phenol	<0.657	3.98	1.43	36	2.58	65	46-88	57	20	mg/kg	06/02/11 23:57	M2R2
Pyrene	<0.657	1.99	1.09	55	1.67	84	22-104	42	20	mg/kg	06/02/11 23:57	R5
1,2,4-Trichlorobenzene	<0.900	1.99	0.918	47	1.47	74	29-96	45	20	mg/kg	06/02/11 23:57	R5
2,4,6-Trichlorophenol	<1.00	3.98	1.39	35	2.44	61	39-90	54	20	mg/kg	06/02/11 23:57	M2R2

Analytical Method: Metals, Total, by SW 6010B

Seq Number: 857884

MB Sample Id: 603718-1-BLK

Matrix: Solid

LCS Sample Id: 603718-1-BKS

Prep Method: SW3050B

Date Prep: 05/26/2011

LCSD Sample Id: 603718-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chromium	<5.00	25	25.7	103	25.7	103	77-124	0	20	mg/kg	05/26/11 16:49	
Lead	<5.00	25	25.4	102	25.3	101	87-119	0	20	mg/kg	05/26/11 16:49	
Magnesium	<50.0	1280	1320	103	1320	103	81-121	0	20	mg/kg	05/26/11 16:49	
Manganese	<5.00	25	25.2	101	25.2	101	79-125	0	20	mg/kg	05/26/11 16:49	

Analytical Method: Metals, Total, by SW 6010B

Seq Number: 857884

Parent Sample Id: 417239-003

Matrix: Soil

MS Sample Id: 417239-003 S

Prep Method: SW3050B

Date Prep: 05/26/2011

MSD Sample Id: 417239-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chromium	13.9	25	37.8	96	37.9	96	75-125	0	20	mg/kg	05/26/11 17:02	
Lead	8.74	25	31.9	93	32.5	95	75-125	2	20	mg/kg	05/26/11 17:02	
Magnesium	15500	1280	17100	125	16900	109	75-125	1	20	mg/kg	05/26/11 17:02	
Manganese	213	25	235	88	236	92	75-125	0	20	mg/kg	05/26/11 17:02	



QC Summary **417239**

City of Tucson / Environmental Services, Tucson, AZ
HQUST Site

Analytical Method: Ferrous Iron by SM3500

Seq Number: 860063 Matrix: Solid
 MB Sample Id: 860063-1-BLK LCS Sample Id: 860063-1-BKS LCSD Sample Id: 860063-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Water Soluble Ferrous Iron	<1.00	10	8.90	89	8.90	89	80-120	0	20	mg/kg	06/14/11 10:00	

Analytical Method: Ferrous Iron by SM3500

Seq Number: 860063 Matrix: Soil
 Parent Sample Id: 417239-006 MS Sample Id: 417239-006 S MSD Sample Id: 417239-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Water Soluble Ferrous Iron	<1.00	10	10.4	104	9.80	98	80-120	6	20	mg/kg	06/14/11 10:00	

Analytical Method: Alkalinity by SM 2320B

Seq Number: 857369 Matrix: Solid
 MB Sample Id: 857369-1-BLK LCS Sample Id: 857369-1-BKS LCSD Sample Id: 857369-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Total (as CaCO3)	<200	1670	1640	98	1660	99	80-120	1	20	mg/kg	05/24/11 15:00	

Analytical Method: Alkalinity by SM 2320B

Seq Number: 857369 Matrix: Soil
 Parent Sample Id: 417239-003 MD Sample Id: 417239-003 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Alkalinity, Total (as CaCO3)	480	540	12	20	mg/kg	05/24/11 15:00	

Trans West Analytical Services 3725 E. Atlanta Ave. • Phoenix, AZ 85040 • Ph: (602) 437-0330 • 3860 S. Palo Verde Rd., Suite 301 • Tucson, AZ 85714 • Ph: (520) 975-2962 Page 2 of 2

Project Manager: Pat Schwarz **Bill to: (if different)** Richard Byrd
Company Name: QRA **Company Name:** City of Tucson Env. Services
Address: 1670 E River Rd. **Address:** 4001 S. Park Ave Bldg. 2
City, State ZIP: Tucson, AZ 85718 **City, State ZIP:** PO Box 2710, Tucson, AZ 85726
Phone: 520-623-9221 **Email:** pschwarz@ci.tucson.arizona.gov

Project Name: HOUST SITE **ANALYSIS REQUEST (PLEASE CHECK METHOD NUMBER)**
Project Number: 055672.D10
P.O. Number: _____
Sampler's Name: Meredith Smith

SAMPLE RECEIPT

Temperature (°C): 3.4 **Temp Blank Present:** NO
Received Intact: Yes No **Wet/Dry / Blue Ice:** Wet/Dry Blue Ice
Cooler Custody Seals: Yes No N/A **Total Containers:** _____
Sample Custody Seals: Yes No N/A **Time Sampled:** 30

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	Number of Containers	Volatiles	Acrolein	Acrylonitrile	2-CEVE	Semi-Volatiles	Organochlorine Pesticides	Oil & Grease (1664-HEM)	TPH (1664-HEM-SGT)	Metals (See Below)	Metals (See Below)	Total Hexavalent Cr	Dissolved Hexavalent Cr	Total Cyanide	Amenable (Free) Cyanide	BOD	pH	Cond.	Alk	TDS	TSS	Cl	SO4	F	Ortho-P	NO2	NO3 (300.0)	NO2+NO3 (353.2)	TKN	NH3	Total-P	Colilert	E. Coli (CFU/MPN)	HPC	Fecal (CFU/MPN)		
S-057911-MES-27	So.1	5/11/11	1455	11	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
S-057911-MES-28	So.1	5/11/11	1510	12	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S-057911-MES-29	So.1	5/11/11	1520	13	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Total 200.7 / 6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Ti Sn V Zn
 Circle Method(s) and Metal(s) to be analyzed 200.8 / 6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1 / 7470A: Hg

Dissolved / TCLP 200.7 / 6010B: 8RCRA 13PPM AI Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Ti Sn V Zn
 Circle Method(s) and Metal(s) to be analyzed 200.8 / 6020: Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag TI U Other: 245.1 / 7470A: Hg

Relinquished by: (Signature) _____ **Received by: (Signature)** _____ **Date/Time** _____
 _____ 5/11/11 1630
 _____ 5/11/11 1345

Upon signing this COC, you accept Xenco terms and conditions unless otherwise agreed upon in writing. Reports are intellectual property of Xenco until paid. Samples will be held 30 days after the final report is emailed unless herby requested. Rush charges and collection fees are pre-approved if necessary.

C.O.C. Serial # **17400**



Sample Receipt Checklist

phx 5/20/11 1348

Client Name: COT-ES

Date and Time Received: 5/19/11 1630

Work Order Number: 417239

Checked by: KRB

Checklist completed by: KRB Date: 5/19/11

Logged In by: lm Date: 5/20/11

Matrix: Soil/GW Courier Name: Client Xenco

Reviewed by: _____ Date: _____

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples received same day of collection?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Temp: <u>3.4</u> Wet Ice Present <input checked="" type="checkbox"/>
Where was the temperature reading taken at?	Sample <input checked="" type="checkbox"/>	Temp Blank <input type="checkbox"/>	Other: _____
VOA Water – VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/> See comments
Water – Microbiological bottles have ≤ 2.5 cm headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Water – All sample pH's acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> Checked by: _____

phx 4.6

If No, list all samples and bottle types that are not acceptable in Additional Comments section. Also state any correction actions.

Sulfide Water – Bottles have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/> (zero headspace ≤ than neck of bottle)
Dissolved Water Analytes – Field Filtered?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Are samples received deemed acceptable?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	If No then complete section below

PC Notified Date: _____ Init: _____ PC Init: _____

Client Notified Date: _____ Init: _____ L/M Date: _____ L/M Date: _____

Contact Name: _____ Action to take: Analyze Cancel Hold Other: _____

Changes/Comments made on original COC? Yes N/A Init: _____ Date: _____

Changes made in LIMS? Yes N/A Init: _____ Date: _____

Additional Comments: SX 417239-08 received with a lot of sediment and air bubbles. Client requested we run sample if possible. Trip Blank has small air bubble @ 150.



Skip Harden <skip.harden@xenco.com>

Additional analysis

1 message

Smith, Meredith E <mesmith@croworld.com>

Mon, May 23, 2011 at 12:55 PM

To: skip.harden@xenco.com

Hi Skip,

I need to add some analyses to some of the samples that were delivered last week for the Tucson Fire Department. This is for work order 417239, submitted May 19, 2011.

For samples S-051911-MES-19 and S-051911-MES-22, I need to add the following metals:

Ferrous Iron

Magnesium

Manganese

Chromium

Lead

Bicarbonate/Carbonate.

Please contact me to let me know that you received this and if there are any questions.

Meredith Smith

602-316-9231


ATTACHMENT B

TREATABILITY STUDY



MEMORANDUM

Sent via email

TO: Pete Schwarz REF. NO.: 055672
FROM: Alan Weston/Sophia Dore/adh/1 DATE: July 14, 2011
c.c.:  Manfred Plaschke
RE: **In Situ Chemical Oxidation, Laboratory Treatability Study
City of Tucson Fire Department Site, Tucson, Arizona**

INTRODUCTION

The Tucson Fire Department site (Site) located in Tucson, Arizona had a gasoline release. Benzene, ethylbenzene, toluene, and xylenes (BTEX) and gasoline range petroleum hydrocarbons from the release are present in Site soils. Soil vapor extraction (SVE) using a long screen length has been performed and soils have been remediated with the exception of 5 to 10 feet of thick clay located about 35 feet below ground surface (bgs). The client has requested that In situ Chemical Oxidation (ISCO) be evaluated as a potential treatment for these soils. The treatment area is approximately 50 feet x 50 feet and less than 10 feet thick. Groundwater is present at 60 feet bgs.

A laboratory treatability study was performed to evaluate the effectiveness of ISCO for treating Site soils. This memo contains the results of the treatability study.

IN SITU CHEMICAL OXIDATION

ISCO is an effective technology for destroying a wide range of organic compounds. The technology is based on the use of strong oxidizing agents to completely oxidize the compounds within relatively short time periods. In a chemical oxidation reaction, the oxidizing agent breaks the carbon bonds in the compounds and converts them within hours into non-toxic compounds, primarily carbon dioxide and water.

The oxidizing agents most commonly used include:

- Potassium permanganate (KMnO₄)
- Fenton's Reagent: hydrogen peroxide (H₂O₂) and ferrous sulfate
- Ozone
- Activated sodium persulfate

KMnO₄ is easier to handle than Fenton's Reagent, which is pH-dependent and requires the use of ferrous salt as a catalyst for optimum performance. Sodium persulfate creates fewer health and safety concerns than Fenton's Reagent but also requires activation by a catalyst. The application of KMnO₄, Fenton's

Reagent, and activated sodium persulfate involves simple methods and does not require the sophisticated equipment used in ozone treatment. Sodium persulfate can be activated by high pH, heat, chelated metals, and hydrogen peroxide. Chelated metals catalysis does not create a very strong oxidant, and heat is difficult and costly to apply in the field; therefore, high pH and hydrogen peroxide are the preferred activators. KMnO_4 is effective for treatment of volatile organic compounds (VOCs) that have carbon-carbon double bonds, including trichloroethylene and its daughter products, cis-1,2-dichloroethylene and vinyl chloride (VC). Fenton's Reagent and activated sodium persulfate are very strong oxidants and can oxidize single carbon bonds; therefore, a wider range of compounds can be oxidized by these oxidants including BTEX and petroleum hydrocarbons.

ISCO is Site-specific, and successful treatment is typically a function of the effectiveness of the delivery system (being able to deliver sufficient amounts of oxidant to the impacted soil and making sufficient "contact") and subsequent transport of the oxidant within the soil matrix. The treatment performance is dependent to a great extent on the soil and groundwater chemistry.

A critical factor in the evaluation of ISCO treatment is determining the dosages of oxidant that are required to effectively oxidize the contaminants present (referred to as stoichiometric demand), as well as the competing reactions. The competing reactions are typically caused by the presence of natural organic materials such as humates and fulvates, as well as reduced metal species. The consumption of oxidants by these non-target compounds is defined as natural oxidant demand (NOD). The NOD combines with the stoichiometric demand to form the total oxidant demand (TOD). Typically not all of the NOD is oxidized prior to the contaminants of concern; therefore, it may not be necessary to meet the entire TOD of the Site soil. In order to determine the optimum dosage, treatability studies are required.

OXIDANT SELECTION

The compounds of concern at this Site are BTEX and petroleum hydrocarbons. KMnO_4 is somewhat effective for BTEX compounds but not effective for petroleum hydrocarbons. If petroleum hydrocarbons are present, BTEX compounds tend to be associated with the petroleum hydrocarbons and do not make contact with KMnO_4 , therefore, KMnO_4 is not effective for BTEX in the presence of petroleum hydrocarbons; therefore, KMnO_4 is not recommended for this Site.

Fenton's Reagent can cause a vigorous reaction with the production of heat and vapors and, therefore, is not recommended for active Sites where combustible materials (such as fuels) are present. This Site is an active Site, therefore, the use of Fenton's Reagent would cause health and safety concerns and is not recommended.

Ozone is sparged into groundwater and, therefore, is more effective for soils in the saturated zone. The clay soils requiring treatment at this Site are in the vadose zone and, therefore, ozone is not recommended for these soils.

Catalyzed sodium persulfate is a strong oxidant that is effective against both BTEX compounds and petroleum hydrocarbons. It reacts fairly slowly in the subsurface and does not cause a vigorous reaction. When catalyzed by high pH, it does not produce a corrosive solution and is safe for use at an active Site. Hydrogen peroxide can also be used to catalyze sodium persulfate, but the catalyzed solution is highly corrosive and not recommended for use at active sites. Therefore, high pH-catalyzed sodium persulfate is the recommended oxidant for this Site and will be tested in the laboratory study.

LABORATORY TREATABILITY STUDY

OBJECTIVES

The objectives of the laboratory treatability study were:

- To assess the effectiveness of ISCO using activated sodium persulfate for treatment of VOCs in representative soil samples
- To assess the soil TOD
- To determine the optimum concentration/dosage of oxidant required for the treatment

The treatability study was performed using soil samples collected from the Site. Two soil samples were received in Conestoga-Rovers & Associates' (CRA's) laboratory located in Niagara Falls, New York on May 23, 2011. The soil samples received were collected from 25-35 feet bgs and 35-45 feet bgs.

Task 1: Initial Characterization

The soil samples were analyzed for VOCs and pH. Neither sample contained BTEX compounds above the analytical detection limit of 50 micrograms per kilogram ($\mu\text{g}/\text{kg}$). The sample from 25-35 feet bgs contained 13.6 milligrams per kilogram (mg/kg) gasoline range organics (GRO), and the sample from 35-45 feet bgs contained 23.9 mg/kg GRO. Both soil samples had a slightly alkaline pH of between 8.1 and 8.3. These data are shown in Table 1.

Treatability testing was performed using the soils from both depth intervals.

Task 2: Chemical Oxidation Microcosm Tests

High pH was tested as an activator for this application. High pH activation using both sodium hydroxide (NaOH) and calcium oxide (quicklime) was tested. The soil sample was titrated with NaOH and quicklime to determine the amounts of these compounds required to raise the pH of the soil to a pH of 12. 1.7 grams (g) of NaOH per kg of soil and 5 g of quicklime per kg of soil were required.

A series of batch microcosm tests were prepared using the soil sample from the Site. The tests were designed to assess the effectiveness of activated sodium persulfate for treatment of Site contaminants in the soil and to determine the optimum concentration range of the oxidant to be used for the full-scale application.

The soil microcosm tests consisted of placing 100 g of soil in 4-ounce (oz.) glass jars and mixing with 25 milliliters (mL) of activated sodium persulfate solution. The activated sodium persulfate solutions had sodium persulfate at concentrations of 10 percent, 15 percent, and 30 percent w/w. The base activated microcosms also received enough NaOH or quicklime to adjust the pH of the soil to pH 12. Control tests were prepared similarly but without the use of an oxidizing agent solution. The jars were sealed immediately to prevent losses of chemicals by volatilization and incubated in the dark at laboratory temperature for 2 weeks. At the end of the incubation period, the microcosms were sampled and analyzed for residual VOCs. The results of these analyses are shown in Tables 2-5.

Treatment of the soil sample from 25-35 feet bgs with NaOH activated sodium persulfate at a dose of 75 g/kg resulted in the removal of 23 percent of the GRO. Treatment with lower oxidant doses did not

result in significant removal of GRO. Treatment of the soil sample from 25-35 feet bgs with quicklime-activated sodium persulfate at a dose of 37.5 g/kg resulted in the removal of 48 percent of the GRO. Increasing the sodium persulfate dose to 75 g/kg increased the GRO removal to 53 percent.

Treatment of the soil sample from 35-45 feet bgs with NaOH-activated sodium persulfate at a dose of 25 g/kg resulted in the removal of 63 percent of the GRO. Increasing the sodium persulfate dose to 75 g/kg increased the GRO removal to 69 percent. Treatment of the soil sample from 35-45 feet bgs with quicklime-activated sodium persulfate at a dose of 25 g/kg resulted in the removal of 69 percent of the GRO. Increasing the sodium persulfate dose to 37.5 g/kg increased the GRO removal to 70 percent.

Additional testing was performed to determine whether varying the amount of quicklime affected the GRO removal. Table 6 shows the results of this testing. When the quicklime dose was decreased from 5 g/kg to 2.5 g/kg, GRO removal dropped from 70 percent to 20 percent. When the quicklime dose was increased to 10 g/kg, GRO removal returned to 71 percent. Increasing the quicklime dose to 25 g/kg increased GRO removal to 87 percent.

These results suggest that better activation of sodium persulfate is achieved using quicklime than using NaOH and that increasing the quicklime dose improves activation of sodium persulfate. The reason for this is likely that quicklime is able to break down the clay matrix by drying the clay and may allow better contact between the sodium persulfate oxidant solution and the sorbed contaminant. Increasing the quicklime improves the contact between the oxidant and the GRO.

Soil from 35-45 feet bgs contained higher GRO levels; however, lower doses of oxidant were required to treat this soil than the soil from 25-35 feet bgs. The soil from 35-45 feet bgs likely had lower naturally occurring organic matter that consumed the oxidant.

Task 3: TOD

TOD testing was performed on both soil samples received. The sodium persulfate TOD of the soil samples was assessed by placing 50 g of soil in an 8-oz. jar and adding 100 mL of 15-percent quicklime-activated sodium persulfate. The initial sodium persulfate concentration was recorded by measuring by titration. After 1 week, the jar was sampled, and the sodium persulfate concentration recorded.

The TOD of the soil sample from 25-35 feet bgs for quicklime-activated sodium persulfate was 77 g/kg and of the soil sample from 35-45 feet bgs was 52 g/kg. It may not be necessary to meet the entire TOD of the soil in order for treatment to occur.

SUMMARY

- Activated sodium persulfate was effective in treating the GRO present in the soil.
- Greater GRO removal was observed in the microcosms treated with quicklime-activated sodium persulfate than in the microcosms treated with NaOH-activated sodium persulfate likely due to improved contact between the GRO and the oxidant.
- Increasing the quicklime dose increased GRO removal.
- GRO removal using the different catalysts is summarized in the table below.

	<i>Soil from 25-35 feet bgs</i>	<i>Soil from 35-45 feet bgs</i>
NaOH-Activated Sodium Persulfate	Dose of 75 g/kg: removal of 23% of	Dose of 25 g/kg: removal of 63% of

	the GRO	the GRO
Quicklime-Activated Sodium Persulfate	Dose of 37.5 g/kg: removal of 48% of the GRO	Dose of 25 g/kg: removal of 69% of the GRO

- The TOD of quicklime-activated sodium persulfate for the soil sample from 25-35 feet bgs for was 77 g/kg and of the soil sample from 35-45 feet bgs was 52 g/kg.

RECOMMENDATION

The results of the study showed that ISCO using activated sodium persulfate was an effective treatment for soil at the Site. The use of quicklime as an activator rather than NaOH improved the contact between the GRO sorbed to soil and the oxidant solution by breaking down the clay matrix of the soil. However, quicklime would need to be mixed with the clay not injected, which would not be possible unless the soils are excavated. It will likely be necessary to inject the oxidant and catalyst. Therefore, NaOH would be recommended for the catalyst. If NaOH is used, more than one injection event may be required in order to ensure dispersal of the oxidant and catalyst within the tight clay.

The results of the microcosm testing suggested that the entire TOD of the soil would not need to be met in order for effective treatment to occur; meeting half of the TOD would be sufficient. Therefore, in the shallower depth interval (25-35 feet bgs), the recommended dose of NaOH-activated sodium persulfate would be 39 g of sodium persulfate and 14 g of NaOH per kg of soil. The recommended dose of quicklime-activated sodium persulfate would be 39 g of sodium persulfate and 10 g of quicklime per kg of soil.

For the deeper interval (35-45 feet bgs), the recommended dose of NaOH-activated sodium persulfate would be 27 g of sodium persulfate and 9 g of NaOH per kg of soil. The recommended dose of quicklime-activated sodium persulfate would be 27 g of sodium persulfate and 10 g of quicklime per kg of soil.

The reagent cost for treatment in the 25-35 feet bgs zone would be \$252 per cubic yard of soil for NaOH-activated sodium persulfate and \$217 per cubic yard of soil quicklime-activated sodium persulfate. The persulfate dose could be delivered in three injection events if injected or a single application event if mixed. The reagent cost for treatment in the 35-45 feet bgs zone would be \$180 per cubic yard of soil for NaOH-activated sodium persulfate and \$163 per cubic yard of soil for quicklime-activated sodium persulfate. This persulfate dose could be applied in a two injection events if injected or a single application event if mixed.

TABLE 1

**INITIAL CHARACTERIZATIONS
LABORATORY TREATABILITY STUDY
CITY OF TUCSON REMEDIAL ACTION
TUCSON, ARIZONA**

<i>Parameters</i>	<i>Units</i>	<i>Bag 1 (25'-35')</i>	<i>Bag 2 (35'-45')</i>
Benzene	µg/kg	ND (50)	ND (50)
Toluene	µg/kg	ND (50)	ND (50)
Ethylbenzene	µg/kg	ND (50)	ND (50)
m/p-Xylenes	µg/kg	ND (50)	ND (50)
o-Xylene	µg/kg	ND (50)	ND (50)
GRO	mg/kg	13.6	23.9
pH	S.U.	8.27	8.10

Notes:

ND = Non-detect at associated value.

TABLE 2

TREATMENT OF SOIL FROM 25-35 FEET BGS WITH SODIUM HYDROXIDE CATALYZED SODIUM PERSULFATE
 LABORATORY TREATABILITY STUDY
 CITY OF TUCSON REMEDIAL ACTION
 TUCSON, ARIZONA

<i>Parameters</i>	<i>Units</i>	<i>Control</i>	<i>10% S₂O₈</i>	<i>15% S₂O₈</i>	<i>30% S₂O₈</i>
Loading Rate	g/kg	0.00	25.0	37.5	75.0
GRO	mg/kg	9.84 / 10.8	11.2 / 13.1	11.3 / 11.1	7.82 / 8.06
% Removal of GRO	%		<1	<1	23.2

Notes:

bgs = below ground surface.

TABLE 3

TREATMENT OF SOIL FROM 25-35 FEET BGS WITH CALCIUM OXIDE CATALYZED SODIUM PERSULFATE
 LABORATORY TREATABILITY STUDY
 CITY OF TUCSON REMEDIAL ACTION
 TUCSON, ARIZONA

<i>Parameters</i>	<i>Units</i>	<i>Control</i>	<i>10% S₂O₈</i>	<i>15% S₂O₈</i>	<i>30% S₂O₈</i>
Loading Rate	g/kg	0.00	25.0	37.5	75.0
GRO	mg/kg	9.84 / 10.8	9.81 / 7.60	5.18 / 5.62	4.73 / 4.91
% Removal of GRO	%		15.8	47.8	53.4

Notes:

bgs = below ground surface.

TABLE 4

**TREATMENT OF SOIL FROM 35-45 FEET BGS WITH SODIUM HYDROXIDE CATALYZED SODIUM PERSULFATE
 LABORATORY TREATABILITY STUDY
 CITY OF TUCSON REMEDIAL ACTION
 TUCSON, ARIZONA**

<i>Parameters</i>	<i>Units</i>	<i>Control</i>	<i>10% S₂O₈</i>	<i>15% S₂O₈</i>	<i>30% S₂O₈</i>
Loading Rate	g/kg	0.00	25.0	37.5	75.0
GRO	mg/kg	21.6 / 20.7	7.76 / 7.69	7.68 / 7.60	6.34 / 6.81
% Removal of GRO	%		63.4	63.8	68.9

Notes:

bgs = below ground surface.

TABLE 5

TREATMENT OF SOIL FROM 35-45 FEET BGS WITH CALCIUM OXIDE CATALYZED SODIUM PERSULFATE
 LABORATORY TREATABILITY STUDY
 CITY OF TUCSON REMEDIAL ACTION
 TUCSON, ARIZONA

<i>Parameters</i>	<i>Units</i>	<i>Control</i>	<i>10% S₂O₈</i>	<i>15% S₂O₈</i>	<i>30% S₂O₈</i>
Loading Rate	g/kg	0.00	25.0	37.5	75.0
GRO	mg/kg	21.6 / 20.7	6.68 / 6.53	6.34 / 6.40	5.97 / 6.70
% Removal of GRO	%		68.7	69.8	70.0

Notes:

bgs = below ground surface.

TABLE 6

ADDITIONAL TREATMENT OF SOIL BAG 2 WITH CALCIUM OXIDE CATALYZED SODIUM PERSULFATE
 LABORATORY TREATABILITY STUDY
 CITY OF TUCSON REMEDIAL ACTION
 TUCSON, ARIZONA

<i>Parameters</i>	<i>Units</i>	<i>Control</i>	<i>30% S₂O₈/0.25g CaO</i>	<i>30% S₂O₈/1.0g CaO</i>	<i>30% S₂O₈/2.5g CaO</i>
Quicklime Loading Rate	g/kg	0.00	2.50	10.0	25.0
GRO	mg/kg	21.6 / 20.7	19.5 / 14.2	6.26 / 5.99	2.93 / 2.69
% Removal of GRO	%		20.4	71.0	86.7

TABLE 7

ANALYSIS OF SOIL TOTAL OXIDANT DEMAND
LABORATORY TREATABILITY STUDY
CITY OF TUCSON REMEDIAL ACTION
TUCSON, ARIZONA

	<i>Units</i>	<i>25-35 feet bgs</i>	<i>35-45 feet bgs</i>
Sodium persulfate concentration at T=0	g/L	195	183
Sodium persulfate concentration at T=7 days	g/L	145	151
Amount of sodium persulfate consumed by TOD per kg of soil after 7 days	g/kg	77	52

Notes:

bgs = below ground surface.

ATTACHMENT C

KLOZUR ESTIMATE



Environmental Solutions

Procedure for Activating Klozur® Persulfate with a 25% Sodium Hydroxide Solution

Background

For alkaline activation of Klozur Persulfate, the pH of the soil and groundwater will need to be maintained between 10.5 and 12. Sodium Hydroxide (NaOH, caustic soda) can be used to achieve the pH target range. The NaOH demand arises from two sources; 1) soil and groundwater acidity, and 2) the generation of acid formed during the decomposition of Klozur Persulfate. The amount of the NaOH needed to raise soil and groundwater pH must be determined experimentally (see procedure below). In addition, to address the persulfate generated acid, 2 moles of NaOH per mole of Klozur Persulfate must be added to neutralize the persulfate-generated acid.

**Total NaOH Demand = NaOH needed to raise soil and groundwater to target pH 10.5-12 +
2 moles NaOH / mole Klozur persulfate**

Safety and Handling

Sodium Hydroxide is a corrosive chemical and can cause severe chemical burns to body tissue if mishandled. Therefore, appropriate Personal Protective Equipment (PPE), including chemical goggles and face shield, is required when handling and transferring NaOH. **Review the MSDS with all workers prior to handling this chemical.**

Sodium Hydroxide is sold commercially in a variety of concentrations. Common concentrations include; 50%, 73%, and solid flakes or pellets (100%). These highly concentrated forms of NaOH may generate extreme exothermic reactions upon dilution. In certain circumstances, so much heat may be liberated that it can boil the solution causing steam eruptions, loss of product containment and damage to equipment. Use of concentrated NaOH require very long dilution times and/or heat exchange equipment with agitation or good mixing.

FMC recommends NaOH solutions of no more than 25% by weight be used to activate Klozur persulfate.

This will help to minimize the generation of heat upon mixing the NaOH with water. FMC does not permit use of NaOH concentrations greater than 25% in its Klozur mixing rental equipment.

Use of NaOH solutions in excess of 25 wt% or in solid form may increase the risk of injury, loss of product containment and equipment damage.



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Activation Procedures

Part A: Soil Titration Method for 25% NaOH determination

1. Take a 500 gram (1.1 lb) sample of the soil from an area that is representative of the contaminated site.
2. Take a 1500 gram (3.31 lb) sample of the ground water.
3. Place these samples in a clean glass or plastic container and mix thoroughly for 5 minutes.
4. Determine and record the pH of the water.
5. Take 100 ml aliquot of the mixed soil/ water slurry in a clean glass beaker. Insert a pH probe to measure the pH as NaOH is added.
6. Set up a burette with 25% NaOH solution.
7. Slowly dose 25% NaOH into the beaker until the pH reaches 10.5 and maintains 10.5 for 30 minutes. Add more 25% NaOH if the pH drops during the test.
8. Record the ml's of 25% NaOH required to neutralize 100 ml's of soil slurry.
9. Calculate and scale up the amount of NaOH to Field scale conditions based on total treatment soil volume.

Note: 3785 ml's (3.785 L) = 1 gallon.

Part B: Determine the amount of 25% NaOH to neutralize the Persulfate-Generated Acid

1. Determine total Klozur® requirement in lbs
2. Multiply lbs of Klozur® by 0.1267 to determine gallons of 25% NaOH required

Note: 2 lb-moles NaOH required / lb-mole persulfate persulfate
→ 1.344 lb of 25 wt% NaOH / lb of Klozur persulfate
Density of 25 wt% NaOH = 10.61 lb / gal
→ 126.67 gal 25 wt% NaOH / 1000 lb Klozur persulfate

The total 25 wt% NaOH demand = amount from Part A + amount from Part B

Applying Klozur solution and 25% NaOH activator to a contaminated site

1. 25% NaOH solution can be:
 - applied to a site prior to addition of the Klozur persulfate solution
 - applied to a site post addition of the Klozur persulfate solution
 - applied to a site simultaneous to the addition of the Klozur persulfate solution



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2. It is recommended that if the Klozur persulfate and 25 wt% NaOH solution are added simultaneously
 - No more than **0.2 gallons** of 25% NaOH should be added per gallon of 30% Klozur solution
 - No more than **0.4 gallons** of 25% NaOH should be added per gallon of 20% Klozur solution
 - No more than **0.6 gallons** of 25% NaOH should be added per gallon of 10% Klozur solution

Mixing of NaOH and persulfate solutions in ratios greater than mentioned above may lead to increases in solution temperature.



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Procedure for Activating Klozur® Persulfate with an 8% Hydrogen Peroxide Solution

Background

Klozur Persulfate can be activated with hydrogen peroxide to generate sulfate radicals, which are capable of destroying a wide range of organic contaminants. In general, hydrogen peroxide is dosed in conjunction with Klozur persulfate in a ratio of 1 mole hydrogen peroxide to 1 mole persulfate up to 10 moles hydrogen peroxide to 1 mole persulfate. Typically, a mole ratio of 5 : 1 hydrogen peroxide to persulfate is sufficient to treat most contaminants under a wide range of site conditions.

Safety and Handling

Hydrogen peroxide is a strong oxidant, capable of generating significant heat and gasses when applied in the subsurface.

Review the MSDS with all workers prior to handling this chemical.

Hydrogen peroxide is sold commercially in a variety of concentrations. Common concentrations include 70%, 50%, 17.5%, and 8%. Highly concentrated forms of hydrogen peroxide may generate extreme exothermic reactions upon injection into the subsurface or when contacting high levels of contamination, potentially liberating significant quantities of gas. Care must be taken to avoid excessive heat and gas evolution as this may cause damage to utilities, buildings and represents a safety hazard if not properly controlled.

FMC recommends hydrogen peroxide solutions of no more than 8% by weight be used to activate Klozur persulfate.

This will help to minimize the generation of heat and gas upon injection of hydrogen peroxide into the subsurface.

Use of hydrogen peroxide solutions in excess of 8 wt% may increase the risk of injury, loss of product containment and equipment damage.

Activation Procedures

1. Determine the quantity of Klozur Persulfate in lbs to be injected into the treatment area at the contaminated site.
2. Determine the number of moles of Klozur persulfate:



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moles Klozur persulfate = lbs of Klozur persulfate / 238

3. Determine the number of moles of hydrogen peroxide needed;

moles of hydrogen peroxide = moles of Klozur persulfate x 5

4. Determine the lbs of hydrogen peroxide needed:

lbs of hydrogen peroxide = moles hydrogen peroxide x 34

5. Determine the gallons of 8% hydrogen peroxide needed:

Gallons of hydrogen peroxide = lbs of hydrogen peroxide / 0.684

Applying Klozur solution and hydrogen peroxide activator to a contaminated site

1. Hydrogen peroxide can be injected after injecting Klozur Persulfate
2. It is recommended that if the Klozur persulfate and 8 wt% hydrogen peroxide solution are added simultaneously
 - No more than **5 gallons** of 8% hydrogen peroxide should be added per gallon of 30% Klozur solution
 - No more than **3 gallons** of 8% hydrogen peroxide should be added per gallon of 20% Klozur solution
 - No more than **2 gallons** of 8% hydrogen peroxide should be added per gallon of 10% Klozur solution

It is always safer to inject the materials sequentially. If mixing hydrogen peroxide and Klozur persulfate above ground, insure safe conditions. Use clean water and clean mixing and handling equipment. Transition metals in the supply water, such as iron, can result in rapid decomposition of the hydrogen peroxide. It is recommended that oxidant solutions be injected promptly into the subsurface and avoid delays resulting in the solutions remaining in mix tanks for extended periods of time. Also use vented tanks and piping when using oxidizing solutions. Always drain lines to empty and avoid trapping solution between valves for extended periods of time. Do not “dead head” pumps. When injecting hydrogen peroxide solutions, it is recommended that temperature and back-pressure be monitored and controlled to prevent highly exothermic, subsurface reactions.

Klozur® Activated Persulfate Demand Calculations



Environmental Solutions

26 July 2011

Customer **CRA – Meredith Messina**Contact **Site in Tucson, AZ****Site Information**

	<u>Value</u>	<u>Unit</u>	<u>Note</u>
Area of Treatment	1,200	ft x ft	customer supplied
Treatment Zone Thickness	10	ft	customer supplied
Porosity	30	%	default value
Soil Volume	311.1	c.y.	calculated value
Ground Water Volume	26,930.0	gal	calculated value
Soil Density	3000	lb / c.y.	default value
Amount of Soil	466.6	tons	calculated value
Soil Oxidant Demand	1	g Klozur / kg soil	estimated value, it is recommend that this be analytically determined

Contaminant Information

Contaminant	Soil Concentration (ppm)	GW Concentration (ppm)	Calculated Total Contaminant Amount (lbs)
GRO	13.6	0	12.7
benzene	2.5	0	2.3

Klozur® Persulfate Demand

Demand from contaminant	703 lb
Demand from SOD	933 lb
Total Klozur® Persulfate Demand	1,636 lb

Klozur® Demand Calculations

Klozur® Persulfate Packaging Options and Pricing

All pricing is fob Tonawanda, NY. Quotes are valid for three months from date at top of document.

Available Packaging Types	# of packages / pallet	lb Klozur® / pallet	# of packages needed*
55.1 # bags	42	2314.2	30
1102 # super sacks	2	2204	2
2200 # super sacks	1	2200	1

* note: # of packages needed is rounded up to nearest whole unit

Available Packaging Types	Pricing (\$ / lb)	Total lbs	Cost in USD (fob Tonawanda, NY)
55.1 # bags	1.51	1,653.0	\$2,496.03
1102 # super sacks	1.41	2,204	\$3,107.64
2200 # super sacks	1.39	2,200	\$3,058.00

freight rates available upon request

Klozur® persulfate and activator demand calculations are based on stoichiometry, and do not take into account the kinetics, or speed of the reaction, and represent the minimum anticipated amount needed to mineralize the contaminants. As a result, these calculations should be used as a general approximation for initial economic assessment. FMC recommends that oxidant demand and treatability testing be performed to verify the quantities of oxidant needed.

Klozur® Demand Calculations

Klozur® Activation Chemistry

Recommended methods to activated Klozur®
Persulfate:

high pH

hydrogen
peroxide

The choice of activation method is based on several factors, including contaminant type, hydrogeology, lithology and other site conditions. While activator demand quantities for all methods are given, not all method are recommended for your given contaminant or site conditions. Please consult with an FMC Environmental Solutions technologist for proper selection of activation chemistry.

*FMC Corporation is the owner or licensee under various patent applications relating to the use of activation chemistries

Klozur® Activation Chemistry

Iron not recommended for activation

Calculation for NaOH (high pH) demand:

NaOH demand = NaOH to neutralize generate HSO₄ from persulfate decomposition + amount needed to raise ground water / soil to a pH of 11

NaOH for ground water / soil pH adjustment needs to be determined in the laboratory via titration.

NaOH demand for HSO ₄ neutralization	549.7	lb @ 100% basis
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FMC recommends using a 25 wt% or less NaOH concentration **

Amount of	25	wt% solution needed	207.4	gal	+ titration amount
			2199.0	lb	+ titration amount

Klozur Caustic Pricing (25% NaOH solution)	0.39	\$/lb	in 560 # drums
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fob, Tonawanda, NY. Freight quote upon request	0.52	\$/lb	in 2800 # totes
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**** note: the addition of concentrated NaOH to water is very exothermic. Add NaOH slowly to water, and allow for excess heat to dissipate.**

Calculation for Hydrogen Peroxide demand:			
demand based on the recommended peroxide to Klozur® persulfate mole ratio of:		5 : 1	
Hydrogen Peroxide demand		1,168.2	lb @ 100% basis
FMC recommends using a 17.5 wt% or less H2O2 concentration			
Amount of	17.5	wt% solution needed	755.1 gal
		Drum	Tote
# of containers		16	3
total gallons		805	755
total lb		7,120	6,675
Pricing in \$/lb	*	0.21	0.2337
Cost in USD \$	*	1,495.20	1,560.05
* for drums, pricing is FOB Tonawanda, NY, Tote pricing does not include freight, bulk pricing is FOB Bayport, TX, and does not include delivery charge or fuel surcharge.			



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Corrosion and Material Compatibility

Technical Bulletin

Background

Klozur[®] Persulfate solutions are used to treat contaminated soil and groundwater and can remediate a wide range of organic contaminants. However, Klozur[®] Persulfate is a very strong oxidant, and its solutions may be very acidic ($\text{pH} \leq 2$) under many conditions, resulting in a corrosive environment for many metals and materials. In this bulletin, results from corrosion studies using un-activated and activated persulfate solutions are presented and recommendations regarding materials of compatibility are made. For additional information regarding the safety of Klozur[®] Persulfate, please refer to the Material Safety Data Sheet (MSDS), which is available from FMC.

Corrosion

Laboratory tests were conducted to evaluate the performance of commonly-used engineering materials exposed to Klozur[®] Persulfate solutions (both activated and un-activated). The tests were performed at two different persulfate solution concentrations: 20 wt% representing typical make-up solutions being injected, and 40 g / L representing typical *in situ* ground water concentrations. These tests were conducted per the guidelines outlined in ASTM G31-72. Corrosion rates for metallic coupons were calculated based on changes in weight over the exposure time. Non-metallic coupons were observed for visual changes and changes in physical properties. Structural properties of concrete and non-metallics were not measured.

Results

For un-activated Klozur[®] Persulfate solutions, no observable corrosion on stainless steel (304L and 316L) was observed during the testing. However, for carbon steel, copper and brass, severe corrosion was observed shortly after the testing was initiated, for both the concentrated (20 wt%) and diluted persulfate solutions. The corrosion rates for carbon steel and brass were observed to decrease when evaluated after one and two months as compared to the one week exposure. However, the rates were sufficiently high to indicate that general corrosion was on-going throughout the two month period, indicating that there was no formation of a protective corrosion-product layer. Kynar[®] and FRP demonstrated satisfactory performance over the one month exposure with no noticeable weight gain or softening observed. Concrete, natural rubber and synthetic rubber showed indications of degradation with long-term exposure to the concentrated persulfate solution.

In general, the impact of the Fe-EDTA activated persulfate solution was similar to the un-activated persulfate solution. No significant increases in corrosion were observed due to the presence of the activator system or subsequent formation of sulfate radicals.

For high pH activated persulfate solutions, sodium hydroxide was added to raise the pH to above 10 and to neutralize sulfuric acid formed upon persulfate decomposition. Significant decreases in corrosion rates were observed for high pH activated persulfate in contact with copper, brass and carbon steel. Negligible corrosion was observed for these metals after one month exposure, even at the 20% persulfate concentration. In addition, no noticeable corrosion was observed for stainless steel. Significant reaction with concrete was observed, however. Significant weight gain (5 – 10%) and bleaching were observed for the concrete after one month exposure to the



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high pH activated persulfate solution, and some dissolution of the concrete was noted during the test.

Table 1: Results for Un-Activated Klozur® Persulfate Solutions (20 wt%) at room temperature after 1 week and 1 months exposure time

mpy – milli-inches per year; ✓ - compatible material, ⊖ - non-compatible material

Material	1 week	1 month	Comments
Stainless steels (304L, 316L)	✓	✓	< 1 mpy. No noticeable corrosion over 2 months
Copper Brass	> 100 mpy ⊖	20 – 50 mpy ⊖	Severe general corrosion, corrosion rate decreases with time.
Carbon steel	> 200 mpy ⊖	50 – 100 mpy ⊖	Severe general corrosion, etching at welds, corrosion rate decreases with time.
Kynar® (PVDF)	✓	✓	No noticeable changes after 2 months exposure
FRP (fiber-reinforced plastic)	✓	✓	No noticeable changes after 2 months exposure
Concrete	Weight gain, bleached appearance	Weight gain (5 – 10%), bleached appearance	Increasing weight gain over time. Some dissolution observed as residue in test chamber.
Natural Rubber	Slight weight gain	Slight weight gain	Cracks and blisters observed after 1 month exposure.
Synthetic rubber (neoprene)	Slight weight gain	Slight weight gain	Cracks and blisters observed after 1 month exposure

Table 2: Results for Un-Activated Klozur® Persulfate Solution (40 g / L) at room temperature after 1 week and 2 months exposure time

mpy – milli-inches per year; ✓ - compatible material, ⊖ - non-compatible material

Material	1 week	1 month	Comments
Stainless steels (304L, 316L)	✓	✓	< 1 mpy. No noticeable corrosion over 2 months
Copper Brass	> 50 mpy ⊖	< 20 mpy ⊖	Severe general corrosion, corrosion rate decreases with time.
Carbon steel	> 50 mpy ⊖	< 20 mpy ⊖	Several general corrosion, etching at welds, corrosion rate decreases with time.
Kynar® (PVDF)	✓	✓	No noticeable changes after 1 month exposure
FRP (fiber-reinforced plastic)	✓	✓	No noticeable changes after 1 month exposure
Concrete	Weight gain, bleached appearance	Weight gain (5 – 10%), bleached appearance	Increasing weight gain over time. Some dissolution observed as residue in test chamber.



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Natural Rubber	Slight weight gain	Slight weight gain	
Synthetic rubber (neoprene)	Slight weight gain	Slight weight gain	

Table 3: Results for Fe-EDTA Klozur® Persulfate Solutions, 20 wt% and 40 g / L at room temperature after 1 month exposure time

mpy – milli-inches per year; ✓ - compatible material, ⊖ - non-compatible material

Material	20 wt% concentration	40 g / L	Comments
Stainless steels (304L, 316L)	✓	✓	< 1 mpy. No noticeable corrosion over 1 month
Copper Brass	20 – 50 mpy ⊖	< 20 mpy ⊖	Severe general corrosion, corrosion rate decreases with time.
Carbon steel	> 50 mpy ⊖	20 - 50 mpy ⊖	Several general corrosion, etching at welds.
Kynar® (PVDF)	✓	✓	No noticeable changes after 1 month exposure
FRP (fiber-reinforced plastic)	✓	✓	No noticeable changes after 1 month exposure
Concrete	Weight gain, bleached appearance	Weight gain (5 – 10%), bleached appearance	Increasing weight gain over time. Some dissolution observed as residue in test chamber.
Natural Rubber	Slight weight gain	Slight weight gain	
Synthetic rubber (neoprene)	Slight weight gain	Slight weight gain	

Table 4: Results for high pH activate Klozur® Persulfate Solutions, 20 wt% and 40 g / L at room temperature after 1 month exposure time

mpy – milli-inches per year; ✓ - compatible material, ⊖ - non-compatible material

Material	20 wt% concentration	40 g / L	Comments
Stainless steels (304L, 316L)	✓	✓	< 1 mpy. No noticeable corrosion over 1 month
Copper Brass	✓	✓	Negligible general corrosion (< 2 mpy). Black film formation observed.
Carbon steel	✓	✓	Negligible general corrosion (< 2 mpy). Isolated rust spots observed
Concrete	Weight gain, bleached appearance	Weight gain (5 – 10%), bleached appearance	Bleached appearance, increasing weight gain over time, some dissolution observed as residue in test container.



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Material Compatibility

Recommend and Compatible Materials:

- Butyl rubber
- EPDM
- FRP (fiber reinforced plastic)
- Glass
- Neoprene
- Plexiglas®
- Polyethylene
- PVC
- Stainless steel (304L and 316L) for all mixing, conveyance and storage equipment
- Teflon®
- Viton

Incompatible Materials

- Aluminum
- Carbon steel
- Galvanized pipe
- Monel
- Nitrile rubbers
- Brass
- Copper
- Iron
- Nickel

Well Construction

- Use compatible materials, such as PVC or Stainless Steel (304L, 316L)

Pumps

- Check compatibility of all seals, gaskets, tubing and hoses

Geoprobe® Rods

- Threaded joints of rods are very susceptible to corrosion. To help reduce corrosion, several practical measures can be taken, such as applying a barrier layer like Loctite® or Teflon® grease to the threads, or utilizing the High pH activation system to reduce acidic corrosion.

Subsurface Utilities

- Always check for location and compatibility of subsurface utilities.

Hosing

- Klozur® persulfate solutions: 20 – 40%, neutral to mildly acidic conditions, moderate to low pressure

Master-Flex 300 EPDM or Equivalent

<u>Specs</u> (diameter)	<u>Max Allowable Working Pressure</u> (PSI)
1"	80
2"	60
3"	50
4"	45
6"	35



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- – 30 F to +140 F
- EPDM black inner liner of hosing with polyethylene helix
- Reinforced and a Type G (PVC) cover
- Medium oil resistance

- Klozur[®] persulfate solutions: 20 – 40%, mildly acidic conditions, high pressure
 - **Alfagomma** (Italian Company)
 - Model T 505 4-4 SP
 - 6 BAF (240 PSI)
 - XLPE chemical S&D
 - **Transporter Ultrachem** (brand name)
 - 250 PSI water pressure

- Fittings
 - 304 Stainless – Schedule 40
 - CPVC – Schedule 80 preferred (could lose strength when heated)
 - PVC (may become embrittled with continued use)