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CPF

CHROSTOWSKI, PEARSALL & FOSTER

SCIENTIFIC RESEARCH AND CONSULTING

March 13, 2008

Ms. Mary Blevins
Ecological Risk Assessor/Permit Official
U.S. Environmental Protection Agency Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: Risk Assessment for the Siemens Water Technologies Corp. Carbon Reactivation Facility in Parker, Arizona

Dear Mary:

Please find attached one hard copy of the *Response to U.S. Environmental Protection Agency Region IX Comments on the Siemens Water Technologies Corp. Carbon Regeneration Facility Risk Assessment, Parker, Arizona*, dated March 13, 2008. The enclosed binder also includes the *Executive Summary of the Risk Assessment for the Siemens Water Technologies Corp. Carbon Reactivation Facility in Parker, Arizona*, also dated March 13, 2008.

In addition, you should have received electronic versions of the enclosed materials which were sent to you from Monte McCue via email on March 13, 2008.

If you have any questions, please feel free to call me at (301) 657-2686.

Sincerely,

Sarah Foster

Sarah Foster
CPF Associates, Inc.

Attachment

cc: M. McCue, Siemens Water Technologies Corp. w/enclosure

CPF ASSOCIATES, INC.

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RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGION IX COMMENTS ON THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REGENERATION FACILITY RISK ASSESSMENT PARKER, ARIZONA

Prepared by:
CPF Associates, Inc.
7708 Takoma Avenue
Takoma Park, MD

Prepared for:
Siemens Water Technologies Corp.
2523 Mutahar Street
Parker, Arizona

March 13, 2008

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EXECUTIVE SUMMARY

SIEMENS WATER TECHNOLOGIES CORP.
CARBON REGENERATION FACILITY RISK ASSESSMENT
PARKER, ARIZONA

Prepared by:
CPF Associates, Inc.
7708 Takoma Avenue
Takoma Park, MD

Prepared for:
Siemens Water Technologies Corp.
2523 Mutahar Street
Parker, Arizona

March 13, 2008

EXECUTIVE SUMMARY
RISK ASSESSMENT FOR THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REACTIVATION FACILITY IN PARKER, ARIZONA

The Siemens Water Technologies Corp. facility (SWT facility) is a carbon reactivation plant located within the 269,000 acre Colorado River Indian Tribes (CRIT) Reservation just outside of the Town of Parker in La Paz County, Arizona. The facility is located in an industrial park established by CRIT on Tribal land and is operated pursuant to a lease between the company and CRIT. The facility reactivates spent carbon which has been previously used to remove pollutants from water and air. The spent carbon is reactivated by heating it to very high temperatures under controlled conditions in a carbon reactivation furnace. The newly reactivated carbon is then reused as an activated carbon product.

A human health and ecological risk assessment of the facility was conducted as part of the facility's permitting activities for the carbon reactivation furnace under the Resource Conservation and Recovery Act permitting regulations at 40 CFR §270.10. A risk assessment is a scientific study that is used to help evaluate risks associated with exposure to chemicals in the environment. This risk assessment represents one of the final steps in a process that has extended over a seven year period beginning with the U.S. Environmental Protection Agency's (USEPA's) request to develop a Risk Assessment Workplan. The risk assessment was conducted by a team of scientists and engineers from independent consulting firms with expertise in risk assessment, toxicology, environmental engineering and air dispersion modeling.

This risk assessment was performed according to a USEPA-approved Risk Assessment Workplan ("Workplan") developed in 2003, updated by agreement with the USEPA to include elements of more recent 2005 USEPA guidance for risk assessments of waste combustion facilities. The USEPA approvals were received prior to the initiation of this study which included evaluations of potential human health and ecological risks associated with both furnace stack air emissions and fugitive air emissions from spent carbon unloading. At USEPA's request, the assessment also included evaluations of potential risks associated with exposure to the facility's effluent discharge to the Colorado River Sewage System Joint Venture (CRSSJV) publicly owned sewage treatment plant and with exposure to airborne chemicals in the workplace at the facility.

The risk assessment for this project is presented in two documents. The first document is the *Draft Risk Assessment for the Siemens Water Technologies Corp. Carbon Reactivation Facility in Parker, Arizona* which was submitted to USEPA on July 30, 2007. The second document is the *Response To USEPA Region IX Comments on the Draft Siemens Water Technologies Corp. Carbon Regeneration Facility Risk Assessment* which was submitted to USEPA on March 13, 2008, to respond to comments on the draft risk assessment that were received from the Agency in late 2007.

The risk assessment used a large amount of site-specific data, including but not limited to:

- comprehensive testing of emissions from the furnace stack, with analysis for site-specific chemicals of potential concern;
- data on spent carbon characteristics, the facility configuration, and facility operations;
- local land use and demographic information;
- water resources data available from the U.S. Geological Survey and the U.S. Bureau of Reclamation; and
- meteorological data from Parker, Arizona.

In the absence of site-specific information, health-protective default values recommended by the USEPA were used. Chemical-specific toxicological data and chemical properties for the compounds selected for evaluation were obtained from the USEPA or from other public health agencies, organizations or databases primarily recommended by the USEPA. In addition, many mathematical models developed by the USEPA and presented in the Agency's guidance documents were applied to perform the risk assessment calculations. Overall, the models and input data used in the risk assessment are expected to provide conservative (i.e., health protective) estimates of potential risks.

Potential risks from stack emissions into the air were evaluated for over 170 compounds selected for detailed assessment based on a comprehensive performance demonstration test (PDT) approved in advance by the USEPA and conducted at the facility by an independent testing firm. The PDT involved several days of stack gas sampling and sophisticated chemical analysis. The list of chemicals selected for evaluation included compounds that were detected in stack emissions and also over 80 compounds that were not detected but were included in the calculations as a conservative measure to ensure that risks would not be underestimated. Stack emission rates for the selected compounds were calculated based on either PDT results, proposed permit limits or, for a few chemicals, long-term average chemical feed rates and a conservative value for the furnace's destruction and removal efficiency. Potential risks from fugitive air emissions were evaluated for 23 compounds selected for evaluation based on their concentrations in spent carbon, the number of deliveries and amounts delivered to the facility, chemical toxicity, and volatility. Air dispersion and deposition modeling was conducted using a model developed and approved by the USEPA to allow calculation of chemical concentrations in air and deposition rates onto the earth's surface within a 154 square mile study area surrounding the facility. The mathematical equations used to calculate the fate and transport of each chemical in the environment, environmental concentrations for each chemical, and human exposures and risks, were based on current USEPA guidance and solved using the Industrial Risk Assessment Program software.

Human Health Risk Assessment

The stack emissions human health risk assessment calculated exposures for several different types of individuals who could hypothetically be exposed to emissions from the plant: adult and child residents, adult and child farmers, adults and children assumed to eat fish caught from the Colorado River or the Main Drain, and a nursing infant. In risk assessment terminology, these groups of individuals are known as "receptors". Each adult or child receptor was assumed to be exposed through a variety of pathways (e.g., the adult farmer receptor was assumed to be exposed via inhalation, soil ingestion, homegrown produce ingestion, and ingestion of home-raised or locally-raised beef, pork, poultry, and eggs). Each adult receptor was also conservatively assumed to be the mother of a breast-fed infant with the potential for transmission of chemicals from the mother through nursing. The fugitive emissions human health risk assessment evaluated inhalation exposures for adult and child residents, and adult and child farmers.

A variety of risk evaluations were performed in the human health risk assessment, as summarized below:

- Chronic long-term excess lifetime cancer risks from stack emissions were lower than USEPA's combustion risk assessment target level of $1x10^{-5}$ (one in 100,000) over a 70-year lifetime when all compounds were included. The excess lifetime cancer risks were reduced to 30 or more times lower than the target risk level when just one compound (that was not detected in the stack gases and has not been received at the facility in spent carbon) was removed from the analysis. Excess lifetime cancer risks due to inhalation of fugitive emissions were at least 200 times below the USEPA target risk level. When excess lifetime cancer risks from both stack and fugitive emissions are considered together, the cancer risk estimate remains below the USEPA target risk level.

- An analysis of chronic long-term non-cancer effects from exposure to stack and fugitive emissions showed that adverse chronic non-cancer effects would not occur. Calculated exposures were at least five times lower for stack emissions, and 250 times lower for fugitive emissions, than the conservative non-cancer target level of 0.25 used by USEPA for combustion sources.

- An analysis of short-term acute inhalation exposures showed that adverse acute effects would not occur at assessed residential locations and also at maximum impact points beyond the facility boundary as a result of both stack and fugitive emissions.

- The calculated air and soil concentrations for residential receptors were determined to be below conservatively-derived preliminary remediation goals that have been developed by USEPA Region 9.

Ecological Risk Assessment

An ecological risk assessment was also conducted to evaluate potential effects of stack emissions on selected representative ecological receptors within the facility area. The ecological analysis evaluated potential impacts to wildlife that was considered to be at greatest risk based on habitat use, exposure potential, ecological significance, and population status. The habitat types that were considered consisted of creosote bush scrub, agricultural areas, riparian corridors and backwaters, the Colorado River, and the Main Drain. The species selected for evaluation consisted of aquatic life, plants, the badger, Gambel's quail, the great horned owl, the burrowing owl, the southwestern willow flycatcher, the double-crested cormorant, the Yuma clapper rail and mule deer. Potential risks were evaluated by comparing calculated concentrations or exposures to toxicity reference values (TRVs) derived to be protective of these receptor groups. The TRVs were obtained from a variety of sources, including the USEPA, the State of Arizona, ecological databases and the published literature.

The calculated environmental concentrations and exposures to animals and birds were not only below the TRVs but also below the conservative ecological target risk level specified by USEPA Region 9 for this project (i.e., a hazard index value of 0.25). These site-specific results indicate that adverse ecological effects from exposure to stack emissions are not expected to occur for the evaluated receptors. Concentrations in surface water and sediment were found to be more than 800 times lower than the 0.25 target hazard index level. Concentrations in plants ranged from just below the 0.25 target level to more than 400 times lower than the 0.25 target level. Exposures to selected bird species were found to be at least five times lower than the 0.25 target level. Finally, exposures to the evaluated mammal species were determined to be at least 5,000 times below the 0.25 target level.

Wastewater Discharge from the Facility to the Wastewater Treatment Plant

The risk assessment also evaluated the potential incremental impact of the facility's wastewater effluent on chemical concentrations discharged from the publicly owned treatment plant into the Main Drain. The analysis also evaluated potential fish tissue concentrations and associated potential human health fish ingestion risks in the Main Drain downstream of the treatment plant's discharge point. This evaluation focused on 19 compounds selected based on measurements obtained from the facility's effluent discharge.

This evaluation showed that the incremental contribution of the facility's effluent on the treatment plant discharge and the Main Drain does not pose unacceptable risks to either aquatic life or human health. The modeled discharge concentrations were below or equivalent to the most stringent applicable state water quality standards and criteria and the treatment plant's discharge permit limits for all evaluated compounds. Semi-annual toxicity tests performed on the treatment plant's discharge since 2000 have consistently shown no toxicity to aquatic organisms. Additionally, potential risks due to ingestion of fish caught from the Main Drain associated with the incremental contribution of the SWT facility effluent were all below USEPA target risk levels for both cancer and non-cancer effects.

Evaluation of Fugitive Emissions in the Workplace

The risk assessment included an evaluation of workplace air concentrations associated with spent carbon unloading using methods consistent with those adopted by the U.S. Occupational Safety and Health Administration and the National Institute of Occupational Safety and Health. This analysis compared modeled on-site ambient air concentrations for the 23 selected compounds due to fugitive emissions, and measured industrial hygiene worker breathing zone concentrations, to workplace permissible exposure limits. The workplace evaluation indicated that modeled ambient air concentrations due to fugitive emissions during spent carbon unloading, and measured worker breathing zone concentrations, did not exceed occupational exposure limits within the property boundary.

Conclusion

In conclusion, the risk assessment demonstrates that, using conservative assumptions:

- the potential risks associated with air emissions from the Siemens Water Technologies Corp. carbon reactivation furnace and from spent carbon unloading are below regulatory and other target risk levels for both human health and ecological receptors;
- the incremental contribution of the facility effluent on the CRSSJV wastewater treatment plant discharge and the Main Drain does not pose unacceptable risks to either aquatic life or human health; and
- modeled on-site air concentrations due to fugitive emissions during spent carbon unloading at the facility, and measured worker breathing zone concentrations, do not exceed occupational exposure limits.

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RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGION IX COMMENTS ON THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REGENERATION FACILITY RISK ASSESSMENT PARKER, ARIZONA

Prepared by:
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Parker, Arizona

March 13, 2008

CPF

RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGION IX COMMENTS ON THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REGENERATION FACILITY RISK ASSESSMENT, PARKER, ARIZONA

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ATTACHMENTS

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LIST OF ABBREVIATIONS

AZDEQ	Arizona Department of Environmental Quality
BOD	Biological oxygen demand
COD	Chemical oxygen demand
COPC	Chemical of potential concern
CPT	Comprehensive Performance Test
CRIT	Colorado River Indian Tribes
CRSSJV	Colorado River Sewage System Joint Venture
CrVI	Hexavalent Chromium
CWT	Centralized Waste Treatment
DRE	Destruction and removal efficiency
E	Exponent in the presentation of numerical results (e.g., 3E-4 = $3x10^{-4}$)
HCl	Hydrogen chloride
HHRAP	Human Health Risk Assessment Protocol published in 2005 by USEPA
HI	Hazard index
HQ	Hazard quotient
IEUBK	Integrated Exposure Uptake Biokinetic Model
IH	Industrial hygiene
IRAP	Industrial Risk Assessment Program
ISCST3	Industrial Source Complex Short-Term 3 air model
NIOSH	National Institute on Occupational Safety and Health
NOx	Nitrogen oxides
OSHA	Occupational Safety and Health Administration
PCBs	Polychlorinated biphenyls
PDT	Performance Demonstration Test
PCDDs/PCDFs	Polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo-furans
POTW	Publicly Owned Treatment Works
ppm	parts per million
RA	Risk assessment
RCRA	Resource Conservation and Recovery Act
SWT	Siemens Water Technologies Corp.
TWA	Time-weighted-average
USEPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey

RESPONSE TO U.S. ENVIRONMENTAL PROTECTION AGENCY REGION IX COMMENTS ON THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REGENERATION FACILITY RISK ASSESSMENT, PARKER, ARIZONA

I. INTRODUCTION

This document provides responses to comments received from the U.S. Environmental Protection Agency (USEPA) Region IX on the *Draft Risk Assessment for the Siemens Water Technologies Corp. Carbon Reactivation Facility in Parker, Arizona*. The Risk Assessment (RA) was prepared on behalf of Siemens Water Technologies Corp. (SWT) by CPF Associates, Inc. and was submitted to USEPA on July 30, 2007. USEPA provided comments on the document to Siemens on December 7, 2007 (USEPA 2007a) and November 26, 2007 (USEPA 2007b).

The SWT facility is a carbon reactivation plant located within the 269,000 acre Colorado River Indian Tribes ("CRIT") Reservation just outside of the Town of Parker in La Paz County, Arizona. The facility is located in an industrial park established by CRIT on Tribal land and is operated pursuant to a lease between the company and CRIT. The facility reactivates spent carbon which has been previously used to remove pollutants from water and air. The spent carbon is reactivated by heating it to very high temperatures under controlled conditions in a carbon reactivation furnace. The newly reactivated carbon is then reused as an activated carbon product.

The RA, consisting of a human health and ecological risk assessment of the facility, was conducted as part of the facility's permitting activities under the Resource Conservation and Recovery Act (RCRA). A risk assessment is a scientific study that is used to help evaluate risks associated with exposure to chemicals in the environment. The risk assessment represents one of the final steps in an evaluation process that has extended over a seven year period. The study was performed in accordance with a USEPA-approved Risk Assessment Workplan and was conducted by a team of scientists and engineers from independent consulting firms with expertise in risk assessment, toxicology, environmental engineering and air dispersion modeling.

The RA demonstrated that the potential risks associated with air emissions from the SWT carbon reactivation furnace and from spent carbon unloading are below regulatory and other target risk levels for both human health and ecological receptors. Additionally, the study showed that the incremental contribution of the facility effluent on the wastewater treatment plant discharge and the Main Drain does not pose unacceptable risks to either aquatic life or human health. Finally, fugitive emissions in ambient air during spent carbon unloading activities were demonstrated not to exceed occupational exposure limits that are established to protect facility employees.

USEPA's review of the ecological risk assessment portion of the RA (USEPA 2007a) concluded that "*the methods and strategies used to quantify the likelihood and magnitude of environmental impacts from Siemens' releases are consistent with the recommended procedures and strategies articulated in EPA's guidance reference. The methods which were used are largely consistent with the 2003 Agency-approved risk assessment workplan. The* *results of the evaluation of putative ecological risk from facility operations to ecological receptors were below ecotoxicologically based levels and below a conservative target level of Hazard Quotient = 0.25.*" USEPA's comments on the ecological risk assessment were generally favorable and do not require additional discussion or analysis.

USEPA's review of the human health risk assessment (USEPA 2007b) concluded that "*the methods and strategies used to quantify the likelihood and magnitude of environmental impacts from SWT releases are consistent with the recommended procedures and strategies articulated in EPA's guidance reference. In addition, the methods employed are largely consistent with the 2003 Agency-approved risk assessment workplan. All estimates of chronic human health impact fall well below the health-based regulatory thresholds with adequate margins of uncertainty.*" USEPA also provided both general comments and page-specific comments on the human health risk assessment.

The remainder of this document provides responses to the USEPA comments on the human health risk assessment. Responses are provided in the same order as presented by USEPA (2007b), with General Comments addressed first and Specific Comments addressed second. In the following sections, USEPA's comments are presented in italics.

Responding to the wide range of comments provided by USEPA has resulted in a lengthy and complex response to comment document. It is recommended, therefore, that the entire risk assessment for this project be comprised of three documents: the original July 2007 draft risk assessment report, this response to comment document, and one inclusive executive summary that reflects and incorporates conclusions from both documents. The executive summary is provided as a stand-alone companion to this document.

II. RESPONSE TO GENERAL COMMENTS

Comment 1: Quality of Data Used to Support Analysis of Human and Ecological Impacts.

Comment:
This comment notes that the Comprehensive Performance Test (CPT) "was conducted and results tabulated in accordance with an Agency-approved CPT test plan." It also states that "All data subject to qualification review [from the CPT] was deemed sufficiently reliable to support quantitative estimations of the magnitude and likelihood of human or ecological impact."

Response: No response necessary.

Comment 2: Fugitive Impact Analysis and Occupational Dosimetry.

Comment:
"A predicted ambient air concentration was modeled from a high-end fugitive release scenario in support of the short-term or acute risk analysis. The location of maximum impact from fugitive releases was identified via the air dispersion and deposition model. This location was identified as about 10 meters north of hopper H-1.
The risk assessment has compared model-predicted airborne contaminant concentrations with constituent-specific occupational standards and recommendations from various government and non-governmental organizations. It would be useful to complement this level of analysis of on-site worker impact by conducting a retrospective comparison of model-predicted, on-site fugitive release air estimates with historical facility air monitoring results or occupational dosimetry data. Results from this level of comparison would provide additional data and further inform the overarching weight of evidence regarding the likelihood and magnitude of facility impacts on proximate, on-site receptors."

Response:

Introduction

Siemens conducts industrial hygiene (IH) surveys annually in which occupational dosimetry data are collected by measuring breathing zone air concentrations for organic compounds and dust. In response to this comment, historical IH survey data were compared to the risk assessment's model-predicted on-site air concentrations associated with fugitive releases. It is important to recognize, however, that these two data sets (measured IH breathing zone concentrations versus modeled outdoor ambient air concentrations) differ substantially in a number of important aspects and thus they should not be directly compared. Rather, as suggested in USEPA's comment, the two data sets together can help provide additional complementary information regarding the potential for impacts on proximate, on-site receptors.

Modeled chemical air concentrations on site were calculated in the risk assessment by combining chemical emission rates with air dispersion modeling results. Emission rates resulting from fugitive releases during spent carbon unloading at the outdoor hopper (H-1) were calculated using mathematical emission models developed for USEPA; these models are described in detail in Section 4.3 of the risk assessment (USEPA 1997, 2004, 2006). Concentrations of compounds in spent carbon, a key input to the emission models, were determined based on detailed spent carbon composition data measured over a four-year period from 2003 through 2006. The chemical emission rates were then combined with output from the USEPA-approved Industrial Source Complex Short-Term 3 (ISCST3) air dispersion model to calculate outdoor ambient air concentrations on site. The highest on-site concentrations identified for this emission source were determined to occur 10 meters (roughly 30 feet) from the outdoor hopper.

Occupational dosimetry data collected during IH surveys are very different from ambient air concentrations calculated in the risk assessment. The IH surveys measure concentrations in the breathing zone of workers by placing samplers on the workers themselves (e.g., on a lapel close to the worker's breathing zone). Collection of dosimetry data from the breathing zone is preferred over modeled concentrations for monitoring potential worker exposures (Chrostowski 1994, NAS 1991) and is an important element in the Siemens' facility worker health and safety program. IH surveys often intentionally focus on workers whose potential exposures may be high based on the activities they perform during the workday. Consistent with this approach, many of the workers sampled at the carbon regeneration facility are engaged in activities in the immediate vicinity of spent carbon (e.g., handling, unloading and/or sampling spent carbon containers received at the facility). This means that the locations at which breathing zone concentrations are measured during IH surveys differ from the on-site location modeled in the risk assessment. Moreover, the workers are likely to be much closer to potential emission sources than the modeled location addressed in the risk assessment. Further, air quality models like ISCST are based on the concept of Gaussian dispersion which assumes that time-averaged concentration profiles at any distance in the crosswind direction are well represented by a normal distribution. This may not be the case for very short distances between sources and receptors (Turner 1994)[1] which introduces an element of uncertainty not associated with dosimetry or personnel monitoring. Because of these types of differences, the measured and modeled concentrations are not directly comparable.

Keeping in mind these fundamental differences, the measured and modeled concentrations were compared as recommended by USEPA Region IX in its comment. The following discussion presents the measured IH data and describes how on-site air concentrations were modeled in response to this comment. Finally, this section examines these two datasets in comparison with occupational exposure limits.

Industrial Hygiene Data

This response to comment focused on historical IH data measured over the same four-year time period that was evaluated in the risk assessment (i.e., 2003-2006) and addressed those compounds that were both reported in the IH surveys and also modeled as fugitives in the risk assessment. The IH data were compiled from survey reports provided to CPF Associates by Siemens[2], and include worker measurements collected over time periods

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[1] Note also that the Pasquill-Gifford dispersion parameters have not been reliably measured for distances less than 0.1 km and the prediction of concentrations at receptors less than 0.1 km from a source is thus uncertain.

[2] Zurich Services Corporation. Industrial Hygiene Report – Parker, Arizona. Submitted to D. Eisner, US Filter Westates. February 26, 2004; Liberty Mutual Insurance Group. Industrial Hygiene Report. Submitted to D. Eisner, US Filter. January 5, 2005; Liberty Mutual Insurance Group. Industrial Hygiene Report. Submitted

ranging from roughly 140 minutes (2.3 hours) to 480 minutes (8 hours). Table 1 presents the reported IH results for the subset of compounds reported in the surveys and also modeled in the risk assessment. As can be seen, most of the organic compounds in Table 1 were not present at detectable concentrations. Those that were present at detectable concentrations were well below the associated Occupational Health and Safety Administration (OSHA) and National Institute of Occupational Safety and Health (NIOSH) occupational exposure limits.[3]

Modeled On-Site Chemical Air Concentrations

Modeled on-site chemical air concentrations associated with fugitive releases during spent carbon unloading were calculated by multiplying chemical emission rates with unitized ISCST3 air dispersion modeling results (i.e., air concentrations calculated for a unit 1 g/sec emission rate). This approach for calculating chemical air concentrations directly follows standard USEPA procedures and more specifically USEPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (HHRAP) guidance. Section 3.8.1 of HHRAP explains how air concentrations are calculated, stating "you can derive COPC-specific[4] air concentrations by multiplying as follows:"

$$\begin{array}{l}\text{COPC-}\\ \text{Specific air}\\ \text{concentration}\\ (\mu g/m^3)\end{array} = \frac{\text{Modeled output air concentration } (\mu g/m^3) * \text{COPC-specific emission rate } (g/sec)}{\text{Unit emission rate } (1 \text{ g/sec})} \quad \text{(Equ 1)}$$

As illustrated by this equation, the two key inputs for calculating chemical air concentrations are the chemical-specific emission rates and the air dispersion modeling outputs. Section 4.3 of the risk assessment describes the mathematical models that were used to calculate these two key inputs. The following discussion provides additional details about the chemical emission rates and the air dispersion modeling in response to this comment.

Chemical Emission Rates

Two sets of chemical emission rates were considered in this response, in order to reflect different assumptions about chemical concentrations in spent carbon.

- One set of modeled emission rates was obtained directly from the risk assessment; these emission rates were derived using average concentrations in spent carbon received at the facility from 2003 through 2006.

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to D. Eisner, US Filter. January 2006; Liberty Mutual Insurance Group. Industrial Hygiene Report. Submitted to D. Eisner, US Filter. December 28, 2006.

[3] The IH surveys analyzed breathing zone samples for more than 30 organic compounds. Most compounds were below the limits of quantitation. Those compounds that were detected were present at levels well below occupational exposure limits.

[4] COPC = chemical of potential concern.

Table 1

Results from Carbon Regeneration Facility Industrial Hygiene (IH) Surveys Conducted from 2003 Through 2006

	Breathing Zone Air Concentrations (a) (concentrations for organic compounds in parts per million (ppm); concentrations for dust in mg/m3)											
Year	**1,4-Dichlorobenzene**	**Benzene**	**Chloroform**	**Cyclohexane**	**Ethylbenzene**	**n-Hexane**	**Styrene**	**Tetrachloroethylene**	**Toluene**	**Trichloroethylene**	**Total dust**	**Respirable dust**
2003	< 0.07	< 0.06	< 0.2	< 0.05	< 0.05	< 0.05	< 0.06	< 0.08	< 0.05	< 0.1	0.12	1.2
	< 0.07	< 0.06	< 0.2	< 0.06	< 0.06	< 0.05	< 0.06	< 0.09	< 0.05	< 0.1	0.42	0.24
	< 0.07	< 0.06	< 0.2	< 0.06	< 0.06	< 0.05	< 0.06	< 0.09	< 0.05	< 0.1	0.41	
	< 0.07	< 0.06	< 0.2	< 0.06	< 0.06	< 0.05	< 0.06	< 0.09	< 0.05	< 0.1	1.4	
	< 0.09	< 0.08	< 0.3	< 0.07	< 0.07	< 0.07	< 0.08	< 0.1	< 0.07	< 0.1		
2004	< 0.0009	< 0.002	< 0.0083		< 0.00066	< 0.0094	< 0.002	< 0.003	< 0.001	< 0.0024		
	< 0.0013	< 0.0029	< 0.012		< 0.00096	< 0.014	< 0.003	< 0.0044	< 0.0015	< 0.0035		
	< 0.00084	< 0.0018	< 0.0077		< 0.00061	< 0.0089	< 0.0019	< 0.0028	< 0.00094	< 0.0022		
	< 0.0017	< 0.0038	< 0.016		< 0.0013	< 0.018	< 0.004	< 0.0058	< 0.002	< 0.0046		
	< 0.00063	< 0.0014	< 0.0058		< 0.00046	< 0.0066	< 0.0014	< 0.0021	< 0.0007	< 0.0017		
	< 0.00086	< 0.0019	< 0.0079		< 0.00063	< 0.0091	< 0.002	< 0.0029	< 0.00097	< 0.0023		
	< 0.0013	< 0.0028	< 0.012		< 0.00094	< 0.014	< 0.0029	< 0.0043	< 0.0014	< 0.0034		
	< 0.00086	< 0.0019	< 0.008		< 0.00063	< 0.0091	< 0.002	< 0.0029	< 0.00097	< 0.0023	0.35	
	< 0.0014	< 0.003	< 0.013		< 0.001	< 0.014	< 0.0031	< 0.0046	< 0.0015	< 0.0036	0.26	
	< 0.00097	< 0.021	< 0.0089		< 0.00071	< 0.01	< 0.0022	< 0.0032	< 0.0011	< 0.0026	2.57	
	< 0.0013	< 0.0028	< 0.012		< 0.00092	< 0.013	< 0.0028	< 0.0042	< 0.0014	< 0.0033	1.49	
2005	< 0.012	< 0.022	< 0.046		< 0.012	< 0.046	< 0.014	< 0.027	< 0.015	< 0.045	0.2	
	< 0.011	< 0.021	< 0.045		< 0.012	< 0.045	< 0.014	< 0.026	< 0.014	< 0.044	0.39	
	< 0.011	< 0.021	< 0.045		< 0.012	< 0.045	< 0.014	< 0.026	< 0.014	< 0.044	0.93	
	< 0.013	< 0.025	< 0.052		< 0.014	< 0.052	< 0.016	< 0.03	0.025	< 0.051	< 0.15	
	< 0.011	< 0.021	< 0.045		< 0.012	< 0.044	< 0.014	< 0.026	< 0.014	< 0.044	0.079	
2006		< 0.0062	< 0.091		< 0.012	0.15	0.028	< 0.05	0.03	< 0.034	5.23	
		< 0.0097	< 0.14		< 0.018	< 0.016	< 0.016	0.78	0.034	< 0.054	2.9	
		< 0.016	< 0.24		< 0.031	0.029	< 0.027	2.7	< 0.027	< 0.09	0.25	
		< 0.0063	< 0.092		< 0.012	0.11	0.027	0.07	0.015	< 0.035	0.65	
		< 0.007	< 0.1		< 0.013	< 0.012	0.039	< 0.056	0.012	< 0.038		
Summary of IH Survey Data												
# samples	21	26	26	5	26	26	26	26	26	26	17	2
# non-detects	21	26	26	5	26	23	23	23	21	26	1	0
% detected	0%	0%	0%	0%	0%	12%	12%	12%	19%	0%	94%	100%
Occupational Exposure Limits (8-hour TWA)												
OSHA PEL	75	1	NA	305	100	511	101	100	199	100	15	5
NIOSH REL	10	0.1	10	305	100	51	50	25	100	25	10	3

Source: IH survey reports provided by Siemens.

< = Compound was not detected at the listed detection limit.

OSHA PEL = Occupational Safety and Health Administration 8-hour time-weighted average Permissible Exposure Limit

NIOSH REL = National Institute for Occupational Safety and Health 8-hour time-weighted average Reference Exposure Limit

(a) The listed compounds include those that were selected for detailed evaluation in the spent carbon fugitive emissions analysis in the risk assessment and also were analyzed for during industrial hygiene monitoring programs conducted at the facility. Compounds that were evaluated in the fugitive emissions risk assessment but were not analyzed for in the IH surveys consisted of inorganics, 1,3-butadiene, acrylonitrile, naphthalene and vinyl chloride.

- The second set of modeled emission rates was evaluated to respond to another USEPA comment (Region IX Specific Comment 10, see below) which recommended that maximum rather than average spent carbon concentrations be used to model fugitive releases for the acute risk analysis. Accordingly, the second set of modeled emission rates was derived using the maximum concentration reported in any spent carbon load that was unloaded at the outdoor hopper over the four-year 2003-2006 period, rather than the average concentration. Table 2 presents the maximum concentrations in spent carbon unloaded at the outdoor hopper, the number of deliveries with this maximum concentration relative to the total number of deliveries, and the mathematically modeled fugitive chemical emission rates.

Air Dispersion Modeling

Equation 1, presented above, shows the HHRAP method for calculating chemical-specific air concentrations. In this method, unitized ISCST3 dispersion model output air concentrations are multiplied by chemical-specific emission rates. The unitized ISCST3 air concentration used in the risk assessment and in this response was the maximum modeled 8-hour average air concentration based on a unit 1 g/sec emission rate (i.e., $\mu g/m^3$ per 1 g/sec). The chemical-specific emission rates were calculated as described above.

The ISCST3 model, using 5 years of input meteorological data, calculated more than 5,400 unitized 8-hour average concentrations at each of the more than 60 on-site receptor locations that were modeled.[5] The maximum impact receptor point was located about 10 meters from the outdoor hopper. At this location, the highest unitized ISCST3 8-hour average concentration, from among the more than 5,400 modeled output concentrations, was 16,426 $\mu g/m^3$ per 1 g/sec (see Section 4.4.4.1 and Appendix D in the risk assessment for more detail on the ISCST3 modeling). All the other 8-hour average air concentrations modeled 10 m from the outdoor hopper, and at all the other modeled on-site receptor locations, were lower than this highest value.

Presentation of Measured Industrial Hygiene Data and Modeled On-Site Air Concentrations

Figure 1 presents the IH survey data and the modeled on-site air concentrations along with available occupational exposure limits. This comparison indicates that both the modeled ambient air concentrations and the measured worker breathing zone concentrations for the four-year period from 2003 through 2006 did not exceed the OSHA permissible exposure limits and the NIOSH reference exposure limits.

The highest modeled air concentration relative to an occupational exposure limit in Figure 1 was the maximum modeled on-site concentration of benzene. The maximum modeled

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[5] Three 8-hour averages are calculated by ISCST3 for each modeled day (i.e., midnight – 8 AM, 8 AM-4 PM, and 4 PM-midnight). With 5 years of input meteorological data, including one leap year, this produces more than 5,400 8-hour average ambient air concentrations at each modeled receptor location (e.g., 5 years * 365 days/year * 3 8-hour averages/day).

Table 2
Maximum Modeled Fugitive Compound Emission Rates During Spent Carbon Unloading at the Outdoor Hopper (a)

Compound	CAS #	Loads Unloaded at Outdoor Hopper H-1 (Based on 2003-2006 Spent Carbon Data)			Emission Rate Based on Maximum Concentration (loads unloaded at H-1) (g/sec) (b)
		Maximum Concentration (ppm)	Number of Deliveries with Maximum	Total Number of Deliveries over 4-Year Period	
1,2-Dibromoethane	106-93-4	0.025	1	11	6.38E-10
1,3-Butadiene	106-99-0	NA	0	1	NA
1,4-Dichlorobenzene	106-46-7	34,500	9	59	4.27E-04
Acrylonitrile	107-13-1	11,500	9	9	2.08E-03
Arsenic	7440-38-2	73.4	3	145 (c)	4.31E-09
Benzene	71-43-2	70.000	15	3,443	2.02E-02
Beryllium	7440-41-7	9.8	1	52	5.73E-10
Cadmium	7440-43-9	79.3	2	63	4.65E-09
Chloroform	67-66-3	5,579	2	634	1.25E-03
Chromium	7440-47-3	294	2	310	1.73E-08
Chromium VI	18540-29-9	170	--	--	9.98E-09
Cobalt	7440-48-4	798	2	171	4.68E-08
Copper	7440-50-8	91	1	256	5.37E-09
Cyclohexane	110-82-7	46,000	3	16	5.87E-02
Ethylbenzene	100-41-4	25,932	13	888	3.19E-03
Naphthalene	91-20-3	3,600	5	57	4.62E-06
n-Hexane	110-54-3	2.220	1	1	8.46E-03
Nickel	7440-02-0	279	2	226	1.64E-08
Styrene	100-42-5	84,784	8	107	7.98E-04
Tetrachloroethylene	127-18-4	91,000	3	1,562	1.96E-02
Toluene	108-88-3	35.837	35	1,145	5.37E-03
Trichloroethylene	79-01-6	16.667	1	2,114	5.61E-03
Vinyl Chloride	75-01-4	6,100	1	375	3.29E-02

-- = no data. Chromium VI concentrations were calculated from total chromium data (see text).

NA – not applicable. Only one spent carbon load containing this compound was received and it was unloaded at H-2.

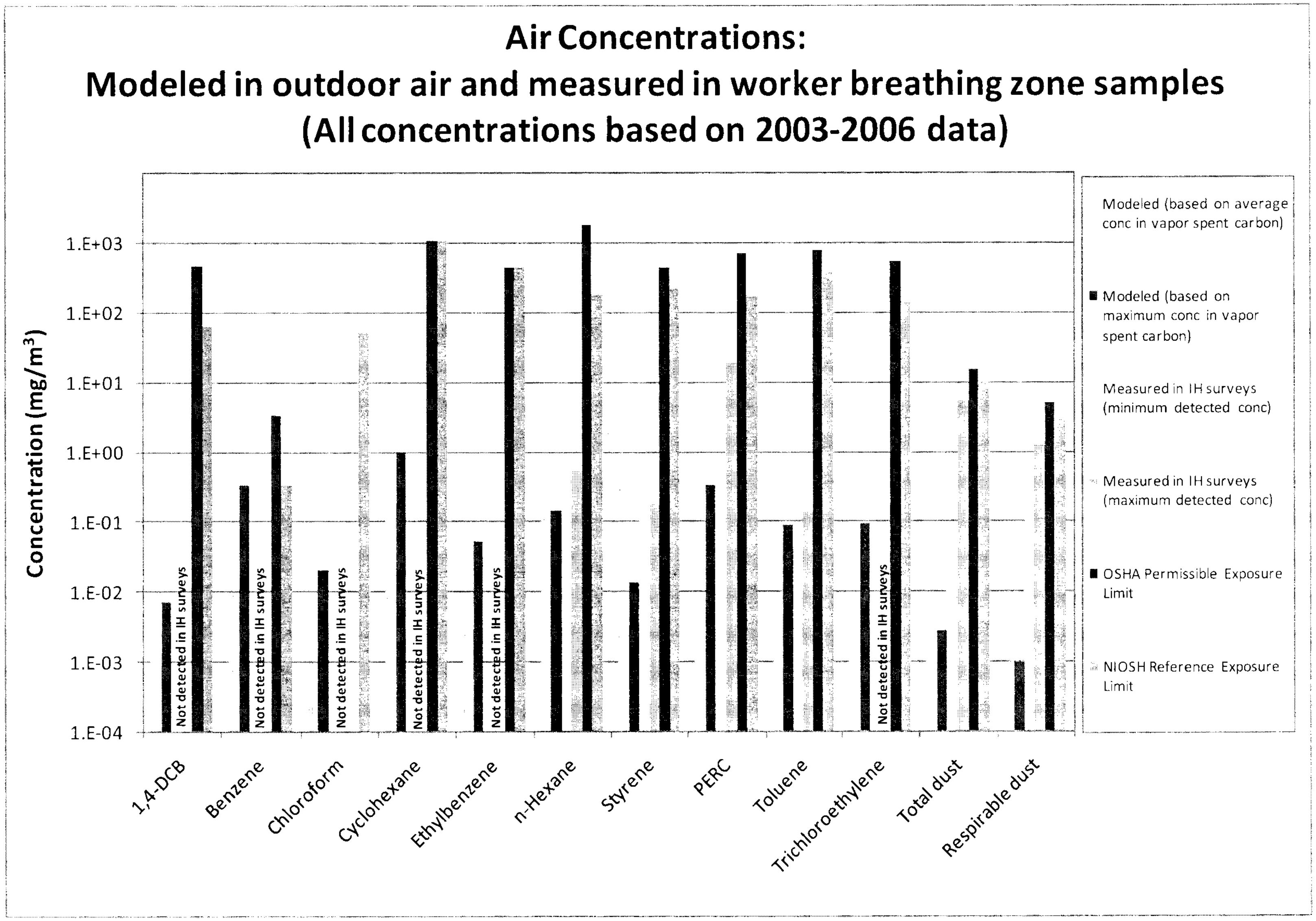
(a) Emission rates were modeled using maximum spent carbon concentrations for loads unloaded at H-1.

(b) Methods for calculating emission rates:

- Emission rates for inorganic compounds (g/sec) = PM10 dust emission rate (g/sec) * concentration in spent carbon (g/g), where the PM10 dust emission rate is 5.87E-5 g/sec (see Section 4.3.3.2 in the risk assessment for a description of the PM10 emission rate calculation).
- See Section 4.3.3.1 in the risk assessment for information on the methods used to calculate emission rates for organic compounds. As described in Section 4.3.3.1 of the risk assessment, emission rates for organic compounds were calculated for two different types of spent carbon received at the facility, aqua spent carbon and vapor spent carbon. Emission rates for unloading vapor spent carbon are shown here and used to evaluate potential risks since these emission rates are higher than those for unloading aqua spent carbon.

(c) Table 4.3-1 of the risk assessment indicated there were 10 deliveries over the 4-year period. The correct number of deliveries is shown here.

Figure 1


Air Concentrations:
Modeled in outdoor air and measured in worker breathing zone samples
(All concentrations based on 2003-2006 data)
Concentration (mg/m³)
1.E+03
1.E+02
1.E+01
1.E+00
1.E-01
1.E-02
1.E-03
1.E-04
Not detected in IH surveys
1,4-DCB
Benzene
Chloroform
Cyclohexane
Ethylbenzene
n-Hexane
Styrene
PERC
Toluene
Trichloroethylene
Total dust
Respirable dust
Modeled (based on average conc in vapor spent carbon)
Modeled (based on maximum conc in vapor spent carbon)
Measured in IH surveys (minimum detected conc)
Measured in IH surveys (maximum detected conc)
OSHA Permissible Exposure Limit
NIOSH Reference Exposure Limit

8-hour average benzene air concentration, calculated using the maximum spent carbon benzene concentration and the maximum ISCST3 dispersion result, was equal to the NIOSH reference exposure limit and about 10 times lower than the OSHA permissible exposure limit. This scenario has a very low probability of occurrence, however, since it assumed that the maximum benzene concentration would be unloaded during a workday also characterized by meteorological conditions that produced the maximum 8-hour average air concentration. The likelihood of this situation occurring is less than 4 in 100,000,000 per year.[6]

As described in more detail in response to Specific Comment #10 below, the facility has a protective worker health and safety program which has been developed to meet the requirements of OSHA. In addition to the IH surveys, the program includes training, medical monitoring, provision and use of personal protective equipment, and hazard communication. Specifically with respect to this response to comment, it is important to recognize that all workers involved in spent carbon unloading operations wear respirators in addition to protective clothing. When handling any spent carbon (whether it is classified as non-hazardous or hazardous), a half-face respirator with organic and dust control cartridges is worn by workers. Workers also wear company-supplied shorts, pants, steel-toed boots, hard hat and safety glasses.

Thus, the results of the dosimetry corroborate the conclusions of the risk assessment model that unacceptable risks to workers associated with chemical exposures from spent carbon are not likely to occur.

Comment 3: Clean Air Act MACT.

Comment:
In this comment, USEPA discusses the Maximum Achievable Control Technology (MACT) standards under the U.S. Clean Air Act and concludes that "While the MACT standards are not risk-based per se, this level of analysis is consistent with the overall weight of evidence suggesting a de minimus level of human and ecological impact from stack emissions on proximate receptors."

Response: No response necessary.

Comment 4: Upset Conditions (Stack Emissions)

Comment:
"Non-cancer or systemically toxic chemicals evaluated in this analysis were assessed by the Agency's threshold strategy which produces a constituent-specific, yet cumulative hazard index. The potential for acute health impacts associated with facility stack release upsets

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[6] The probability of the maximum benzene concentration occurring in spent carbon is 15 in 3,443 (i.e., 15 deliveries with the maximum concentration were received over the 4-year period out of a total of 3,443 spent carbon deliveries containing benzene). The probability of meteorological conditions producing the maximum 8-hour air concentration is less than 1 in 5,400 over 5 years (i.e., 1 maximum 8-hour concentration out of more than 5,400 calculated 8-hour average concentrations at the receptor location). The overall probability of the maximum modeled benzene concentration occurring is, thus, [(15/3443) / 4 years] * [(<1/5400) / 5 years] = <4E-8 or less than 4 in 100,000,000 per year.

were subject to this level of scrutiny. Discrete locations subject to the maximum levels of contaminant deposition were identified by the computerized air dispersion and deposition model. These discrete locations, irrespective of their relationship to known human receptors, were then used to determine media-specific exposure point concentrations - and the concomitant estimate of hazard incurred by a hypothetical receptor.

The acute or short-term hazard estimates associated with upset stack releases should be clearly detailed on pg 42. The cumulative acute hazard index associated with grid locations (A_1) and (A_2) should be clearly provided either in a table or a revised narrative. Further, the acute or short-term upset stack release concentration should be consistent with the 1-hr maximum upset emission rate rather than the 1-hr average upset emission rate.

Moreover, the relationship between the 10x increased emission rate associated with a hypothetical facility upset condition and the acute hazard index is not clear based upon the data provided. That is, the contention that acute hazard quotients are uniformly and linearly increased by a factor of 10 is not supported by any data, as the air dispersion and deposition model is based on a gaussian distribution, plume-depleted, mass balance algorithm."

Response:

Introduction

In response to this comment, a more detailed explanation and presentation of acute, short-term hazard estimates associated with upset stack releases is provided. This section first explains how the acute inhalation risk assessment for upset conditions was performed in response to this comment. Then the results of this assessment are presented. In the course of this discussion, USEPA's comments noted above are addressed.

An acute inhalation risk assessment for upset stack emissions is performed using three key pieces of information: 1) chemical stack emission rates under upset conditions, 2) unitized air dispersion model output concentrations calculated using a unit 1 g/sec emission rate, and 3) short-term acute inhalation reference exposure concentrations. The short-term reference exposure concentrations were identified and compiled according to USEPA's HHRAP guidance and are addressed in Section 4.1.2 of the risk assessment. In this section, an expanded discussion of the remaining two items, upset emission rates and air model outputs, is provided.

Upset Stack Emission Rates

Upset stack emission rates were calculated in two steps. First, maximum measured emission rates from the performance demonstration test (PDT) were compiled[7] and then, second, these maximum values were increased by USEPA's default upset multiplication factor.

The approach used in this response to comment is even more conservative than that provided for in the risk assessment, in that maximum measured emission rates from the PDT were used in this response whereas the risk assessment, in accordance with the project Workplan, used

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[7] Stack measurements for nitrogen oxides and sulfur dioxide were obtained from miniburn data since these compounds were not measured in the PDT.

average emission rates derived across the three PDT test runs. This change was made to respond to USEPA's comment to use the "maximum upset emission rate." These maximum measured emission rates are presented in Table 3 along with the stack emission rates that were used in the risk assessment. As described in Section 4.5.2 of the risk assessment, and as shown in Table 3, the differences between the average and maximum measured stack emission rates for those compounds with emission rates based on stack test data were not substantial, and ranged from a factor of 1.0 (i.e., no change) to a factor of 3.0.

Upset emission rates were calculated from the maximum measured values according to the USEPA guidance presented in Section 2.2.5 of HHRAP which, as a default and in the absence of site-specific data, assumes that "emissions during process upsets are 10 times greater than emissions measured during the trial burn." USEPA indicates in HHRAP that the multiplicative default factor of 10 is based on a method presented in 1990 by the California Air Resources Board for non-hazardous municipal waste combustors; HHRAP has extrapolated this to hazardous waste incinerators. An activated carbon regeneration facility is not a hazardous waste incinerator and is intrinsically easier to control than an incinerator due to homogeneity in the feedstock (consisting of only spent carbon), thereby ensuring that the default assumption is likely to be overly conservative when applied to carbon regeneration facilities. In addition, peer review comments received by USEPA on the hazardous waste incinerator methodology pointed out that "available technical information indicates that upset emissions are not close to 10 times normal emissions" (USEPA 2005). Nonetheless, in keeping with USEPA's HHRAP default approach, and because site-specific emissions data during upsets were not available, the upset stack emission rates were calculated by multiplying the maximum measured stack emission rates by a factor of 10. These upset emission rates are also listed in Table 3.

Upset conditions occur at the facility very infrequently. Facility data describing the frequency and duration of upset conditions from 2000 and 2001, which were presented in the risk assessment, indicate that upset conditions occur for about 0.24% of the time the facility is operating. The facility operated under upset conditions for 16.1 hours out of a total of 6,745 operating hours in 2000 and for 18.4 hours out of a total of 7,844 operating hours in 2001 (see Table 4.2-2 in the risk assessment for more details).

Proportionality of Chemical Emission Rates to Air Concentrations and Hazard Quotients

USEPA's comment questions whether the relationship between acute hazard quotients (HQs) and emission rates is linear and the contention that a factor of 10 increase in emission rates will increase HQs by a factor of 10. This section responds to USEPA's comment, drawing directly from USEPA guidance.

Short-term chemical-specific air concentrations for the upset acute risk assessment, and in fact chemical-specific air concentrations throughout the risk assessment, were calculated in accordance with standard USEPA procedures and HHRAP guidance. USEPA's guidance in Section 3.8 of HHRAP (Using Model Output) states: "ISCST3 output (air concentrations and deposition rates) are usually provided on a unit emission rate (1.0 g/sec) basis from the combustor or emission source, and aren't COPC-specific. This is to preclude having to run the

Table 3
Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Inorganic Compounds						
Aluminum	7429-90-5	1.15E-04	PDT	1.43E-04	1.2	1.43E-03
Antimony	7440-36-0	3.89E-06	PDT	4.96E-06	1.3	4.96E-05
Arsenic	7440-38-2	1.26E-04	permit limit	6.22E-06	not applicable (b)	6.22E-05
Barium	7440-39-3	9.01E-06	PDT	1.10E-05	1.2	1.10E-04
Beryllium	7440-41-7	1.26E-04	permit limit	3.13E-07	not applicable (b)	3.13E-06
Cadmium	7440-43-9	3.12E-04	permit limit	1.31E-05	not applicable (b)	1.31E-04
Chromium	7440-47-3	1.26E-04	permit limit	6.04E-05 (c)	not applicable (b)	6.04E-04
Chromium, hexavalent	7440-47-3	5.80E-06	PDT	6.28E-06	1.1	6.28E-05
Cobalt	7440-48-4	5.82E-07	PDT	9.38E-07	1.6	9.38E-06
Copper	7440-50-8	1.19E-04	PDT	1.80E-04	1.5	1.80E-03
Lead	7439-92-1	3.12E-04	permit limit	5.60E-04 (c)	not applicable (b)	5.60E-03
Manganese	7439-96-5	4.61E-05	PDT	7.10E-05	1.5	7.10E-04
Mercuric chloride	7487-94-7	2.30E-05	permit limit	1.62E-06	not applicable (b)	1.62E-05
Mercury, elemental	7439-97-6	1.34E-06	permit limit	9.48E-08	not applicable (b)	9.48E-07
Nickel	7440-02-0	9.91E-06	PDT	1.29E-05	1.3	1.29E-04
Selenium	7782-49-2	3.76E-06	PDT	4.85E-06	1.3	4.85E-05
Silver	7440-22-4	2.73E-06	PDT	4.62E-06	1.7	4.62E-05
Thallium	7440-28-0	9.24E-06	PDT	1.13E-05	1.2	1.13E-04
Vanadium	7440-62-2	2.43E-06	PDT	3.23E-06	1.3	3.23E-05
Zinc	7440-66-6	1.51E-04	PDT	2.36E-04	1.6	2.36E-03
Organic Compounds						
1,1,1-Trichloroethane	71-55-6	2.78E-07	PDT	3.17E-07	1.1	3.17E-06
1,1,2,2-Tetrachloroethane	79-34-5	1.32E-06	PDT	1.51E-06	1.1	1.51E-05
1,1,2-Trichloroethane	79-00-5	8.02E-07	PDT	9.14E-07	1.1	9.14E-06
1,1-Dichloroethane	75-34-3	3.09E-07	PDT	3.53E-07	1.1	3.53E-06

Table 3

Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
1,1-Dichloroethene	75-35-4	3.52E-07	PDT	4.01E-07	1.1	4.01E-06
1,1-Dichloropropene	563-58-6	2.15E-07	PDT	2.45E-07	1.1	2.45E-06
1,2,3-Trichlorobenzene	87-61-6	1.73E-06	PDT	1.97E-06	1.1	1.97E-05
1,2,3-Trichloropropane	96-18-4	1.25E-06	PDT	1.42E-06	1.1	1.42E-05
1,2,4-Trichlorobenzene	120-82-1	9.30E-07	PDT	1.06E-06	1.1	1.06E-05
1,2,4-Trimethylbenzene	95-63-6	6.26E-07	PDT	7.14E-07	1.1	7.14E-06
1,2-Dibromo-3-chloropropane	96-12-8	2.60E-06	PDT	2.97E-06	1.1	2.97E-05
Ethylene dibromide	106-93-4	1.32E-06	PDT	1.50E-06	1.1	1.50E-05
1,2-Dichlorobenzene	95-50-1	8.43E-07	PDT	9.73E-07	1.2	9.73E-06
1,2-Dichloroethane	107-06-2	5.05E-07	PDT	6.15E-07	1.2	6.15E-06
1,2-Dichloroethene (cis)	156-59-2	4.17E-07	PDT	5.17E-07	1.2	5.17E-06
1,2-Dichloroethene (trans)	156-60-5	2.89E-07	PDT	3.29E-07	1.1	3.29E-06
1,2-Dichloropropane	78-87-5	3.98E-07	PDT	4.49E-07	1.1	4.49E-06
1,2-Diphenylhydrazine	122-66-7	7.00E-07	PDT	8.02E-07	1.1	8.02E-06
1,3,5-Trimethylbenzene	108-67-8	4.05E-07	PDT	4.62E-07	1.1	4.62E-06
1,3-Dichlorobenzene	541-73-1	8.86E-07	PDT	1.01E-06	1.1	1.01E-05
1,3-Dichloropropane	142-28-9	3.77E-07	PDT	4.29E-07	1.1	4.29E-06
1,3-Dichloropropene	542-75-6	7.58E-07	PDT	8.46E-07	1.1	8.46E-06
1,3-Dinitrobenzene	99-65-0	1.08E-06	PDT	1.26E-06	1.2	1.26E-05
1,4-Dichlorobenzene	106-46-7	1.00E-06	PDT	1.16E-06	1.2	1.16E-05
1-Hexane (n-hexane)	110-54-3	7.98E-10	FR&DRE	--	not applicable (b)	8.0E-09
2,2'-oxybis (1-Chloropropane)	108-60-1	9.72E-07	PDT	1.11E-06	1.1	1.11E-05
2,2-Dichloropropane	594-20-7	2.79E-07	PDT	3.18E-07	1.1	3.18E-06
2,4,5-Trichlorophenol	95-95-4	1.61E-06	PDT	1.85E-06	1.1	1.85E-05
2,4,6-Trichlorophenol	88-06-2	1.27E-06	PDT	1.47E-06	1.2	1.47E-05
2,4-Dichlorophenol	120-83-2	1.30E-06	PDT	1.68E-06	1.3	1.68E-05

Table 3

Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
2,4-Dimethylphenol	105-67-9	3.09E-06	PDT	3.50E-06	1.1	3.50E-05
2,4-Dinitrophenol	51-28-5	9.15E-06	PDT	1.04E-05	1.1	1.04E-04
2,4-Dinitrotoluene	121-14-2	1.32E-06	PDT	1.52E-06	1.1	1.52E-05
2,5-Dimethylfuran	625-86-5	8.43E-07	PDT	2.53E-06	3.0	2.53E-05
2,5-Dimethylheptane	2216-30-0	1.68E-05	PDT	2.77E-05	1.6	2.77E-04
2,5-Dione, 3-hexene	17559-81-8	9.53E-07	PDT	2.86E-06	3.0	2.86E-05
2,6-Dinitrotoluene	606-20-2	1.06E-06	PDT	1.22E-06	1.2	1.22E-05
Methyl ethyl ketone	78-93-3	4.51E-06	PDT	5.14E-06	1.1	5.14E-05
2-Chloronaphthalene	91-58-7	6.53E-07	PDT	7.59E-07	1.2	7.59E-06
2-Chlorophenol	95-57-8	8.60E-07	PDT	9.83E-07	1.1	9.83E-06
2-Chlorotoluene	95-49-8	5.10E-07	PDT	5.77E-07	1.1	5.77E-06
2-Hexanone	591-78-6	1.88E-06	PDT	2.14E-06	1.1	2.14E-05
2-Methyl octane	3221-61-2	3.98E-06	PDT	8.58E-06	2.2	8.58E-05
2-Methylnaphthalene	91-57-6	5.79E-08	PDT	8.13E-08	1.4	8.13E-07
Cresol, o-	95-48-7	2.09E-06	PDT	2.38E-06	1.1	2.38E-05
2-Nitroaniline	88-74-4	1.04E-06	PDT	1.21E-06	1.2	1.21E-05
2-Nitrophenol	88-75-5	1.77E-06	PDT	2.01E-06	1.1	2.01E-05
3,3'-Dichlorobenzidine	91-94-1	4.96E-06	PDT	5.68E-06	1.1	5.68E-05
Cresol, m-	108-39-4	9.15E-07	PDT	1.04E-06	1.1	1.04E-05
Cresol, p-	106-44-5	9.15E-07	PDT	1.04E-06	1.1	1.04E-05
3-Ethyl benzaldehyde	34246-54-3	2.38E-06	PDT	3.89E-06	1.6	3.89E-05
3-Hexen-2-one	763-93-9	1.14E-04	PDT	3.41E-04	3.0	3.41E-03
3-Nitroaniline	99-09-2	2.91E-06	PDT	3.33E-06	1.1	3.33E-05
Ethylidene acetone (3-penten-2-one)	625-33-2	4.83E-06	PDT	1.45E-05	3.0	1.45E-04
3-Penten-2-one, 4-methyl	141-79-7	9.30E-05	PDT	2.14E-04	2.3	2.14E-03

Table 3
Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
4,4'-DDD	72-54-8	1.31E-07	PDT	2.01E-07	1.5	2.01E-06
4,4'-DDE	72-55-9	4.47E-08	PDT	5.64E-08	1.3	5.64E-07
4,4'-DDT	50-29-3	3.34E-08	PDT	6.63E-08	2.0	6.63E-07
4,6-Dinitro-2-methylphenol	534-52-1	4.37E-06	PDT	4.95E-06	1.1	4.95E-05
4-Bromophenyl-phenyl ether	101-55-3	6.71E-07	PDT	7.69E-07	1.1	7.69E-06
4-Chloro-3-methylphenol	59-50-7	2.17E-06	PDT	2.51E-06	1.2	2.51E-05
4-Chloroaniline	106-47-8	4.17E-06	PDT	4.78E-06	1.1	4.78E-05
4-Chlorophenyl-phenyl ether	7005-72-3	1.11E-06	PDT	1.29E-06	1.2	1.29E-05
4-Chlorotoluene	106-43-4	4.42E-07	PDT	5.03E-07	1.1	5.03E-06
4-Ethyl benzaldehyde	4748-78-1	1.30E-06	PDT	3.89E-06	3.0	3.89E-05
4-Nitroaniline	100-01-6	2.34E-06	PDT	2.57E-06	1.1	2.57E-05
4-Nitrophenol	100-02-7	2.92E-06	PDT	3.33E-06	1.1	3.33E-05
9-Octadecenamide	301-02-0	2.52E-06	PDT	7.57E-06	3.0	7.57E-05
Acenaphthene	83-32-9	4.48E-09	PDT	5.51E-09	1.2	5.51E-08
Acenaphthylene	208-96-8	8.11E-09	PDT	1.52E-08	1.9	1.52E-07
Acetone	67-64-1	6.14E-05	PDT	6.21E-05	1.0	6.21E-04
Acetophenone	98-86-2	3.41E-06	PDT	3.62E-06	1.1	3.62E-05
Acrylic Acid	79-10-7	1.80E-11	FR&DRE	--	not applicable (b)	1.8E-10
Acrylonitrile	107-13-1	1.10E-05	PDT	1.25E-05	1.1	1.25E-04
Aldrin	309-00-2	2.45E-08	PDT	2.77E-08	1.1	2.77E-07
Aniline	62-53-3	7.19E-06	PDT	8.33E-06	1.2	8.33E-05
Anthracene	120-12-7	1.28E-08	PDT	2.61E-08	2.0	2.61E-07
Benzaldehyde	100-52-7	4.90E-06	PDT	6.60E-06	1.3	6.60E-05
Benzene	71-43-2	2.59E-06	PDT	3.02E-06	1.2	3.02E-05
Benzidine	92-87-5	4.68E-05	PDT	5.35E-05	1.1	5.35E-04
Benzo(a)Anthracene	56-55-3	2.84E-09	PDT	4.82E-09	1.7	4.82E-08

Table 3

Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Benzo(a)pyrene	50-32-8	3.58E-09	PDT	5.45E-09	1.5	5.45E-08
Benzo(b)fluoranthene	205-99-2	2.94E-08	PDT	3.28E-08	1.1	3.28E-07
Benzo(e)pyrene	192-97-2	5.35E-09	PDT	9.18E-09	1.7	9.18E-08
Benzo(g,h,i)perylene	191-24-2	1.13E-08	PDT	1.61E-08	1.4	1.61E-07
Benzo(k)fluoranthene	207-08-9	5.43E-09	PDT	8.46E-09	1.6	8.46E-08
Benzoic Acid	65-85-0	2.81E-05	PDT	3.19E-05	1.1	3.19E-04
Benzoic acid, methyl ester	93-58-3	8.07E-07	PDT	2.42E-06	3.0	2.42E-05
Benzonitrile	100-47-0	1.87E-06	PDT	2.14E-06	1.1	2.14E-05
Benzyl alcohol	100-51-6	2.09E-05	PDT	2.37E-05	1.1	2.37E-04
Bis(2-chloroethoxy) methane	111-91-1	8.34E-07	PDT	9.54E-07	1.1	9.54E-06
Bis-(2-chloroethyl) ether	111-44-4	8.14E-07	PDT	9.31E-07	1.1	9.31E-06
Bis(2-ethylhexyl) phthalate	117-81-7	1.69E-05	PDT	1.96E-05	1.2	1.96E-04
Bromobenzene	108-86-1	5.00E-07	PDT	5.70E-07	1.1	5.70E-06
Bromochloromethane	74-97-5	1.52E-06	PDT	1.74E-06	1.1	1.74E-05
Bromodichloromethane	75-27-4	5.44E-06	PDT	8.53E-06	1.6	8.53E-05
Bromoform (tribromomethane)	75-25-2	1.38E-05	PDT	1.60E-05	1.2	1.60E-04
Bromomethane (methyl bromide)	74-83-9	4.72E-06	PDT	6.40E-06	1.4	6.40E-05
Butylbenzene, n-	104-51-8	6.09E-07	PDT	6.90E-07	1.1	6.90E-06
Butylbenzene, sec-	135-98-8	4.89E-07	PDT	5.58E-07	1.1	5.58E-06
Butylbenzene, tert-	98-06-6	5.80E-07	PDT	6.61E-07	1.1	6.61E-06
Butylbenzylphthalate	85-68-7	1.08E-06	PDT	1.26E-06	1.2	1.26E-05
Carbazole	86-74-8	9.83E-07	PDT	1.12E-06	1.1	1.12E-05
Carbon Disulfide	75-15-0	1.24E-06	PDT	1.62E-06	1.3	1.62E-05
Carbon Tetrachloride	56-23-5	6.77E-07	PDT	8.61E-07	1.3	8.61E-06
Chlorine	7782-50-5	3.60E-02	permit limit	2.25E-03 (c)	not applicable (b)	2.25E-02
Chlorobenzene	108-90-7	2.58E-04	PDT	3.77E-04 (c)	1.5	3.77E-03

Table 3
Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Chlorobenzilate	510-15-6	1.17E-07	PDT	1.54E-07	1.3	1.54E-06
Chlorodibromomethane	124-48-1	1.08E-05	PDT	1.19E-05	1.1	1.19E-04
Chloroethane	75-00-3	1.32E-06	PDT	1.50E-06	1.1	1.50E-05
Chloroform	67-66-3	8.24E-06	PDT	1.91E-05	2.3	1.91E-04
Chloromethane (methyl chloride)	74-87-3	2.41E-05	PDT	4.91E-05	2.0	4.91E-04
Chrysene	218-01-9	1.10E-08	PDT	1.72E-08	1.6	1.72E-07
Cumene (Isopropylbenzene)	98-82-8	3.64E-07	PDT	4.01E-07	1.1	4.01E-06
Diallate	2303-16-4	6.27E-06	PDT	7.09E-06	1.1	7.09E-05
Dibenzo(a,h)anthracene	53-70-3	4.67E-10	PDT	4.82E-10	1.0	4.82E-09
Dibenzofuran	132-64-9	1.06E-06	PDT	1.23E-06	1.2	1.23E-05
Dibromomethane	74-95-3	1.28E-06	PDT	1.46E-06	1.1	1.46E-05
Dichlorodifluoromethane	75-71-8	3.83E-06	PDT	8.82E-06	2.3	8.82E-05
Dieldrin	60-57-1	1.17E-08	PDT	1.32E-08	1.1	1.32E-07
Diethyl phthalate	84-66-2	1.01E-06	PDT	1.16E-06	1.2	1.16E-05
Dimethylphthalate	131-11-3	6.71E-07	PDT	7.69E-07	1.1	7.69E-06
Di-n-butylphthalate	84-74-2	3.71E-06	PDT	4.23E-06	1.1	4.23E-05
Di-n-octyl phthalate	117-84-0	1.42E-06	PDT	1.64E-06	1.2	1.64E-05
Dioxane (1,4)	123-91-1	8.91E-11	FR&DRE	--	not applicable (b)	8.9E-10
Diphenylamine	122-39-4	1.05E-06	PDT	1.22E-06	1.2	1.22E-05
Endosulfan I	959-98-8	1.31E-08	PDT	1.48E-08	1.1	1.48E-07
Endosulfan II	33213-65-9	2.67E-08	PDT	5.02E-08	1.9	5.02E-07
Endosulfan sulfate	1031-07-8	1.52E-08	PDT	1.72E-08	1.1	1.72E-07
Endrin	72-20-8	4.79E-08	PDT	5.41E-08	1.1	5.41E-07
Endrin aldehyde	7421-93-4	5.83E-08	PDT	1.15E-07	2.0	1.15E-06
Endrin ketone	53494-70-5	1.72E-08	PDT	1.95E-08	1.1	1.95E-07

Table 3

Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Ethylbenzene	100-41-4	3.13E-07	PDT	4.51E-07	1.4	4.51E-06
Ethylene Glycol	107-21-1	1.25E-07	FR&DRE	--	not applicable (b)	1.3E-06
Fluoranthene	206-44-0	4.90E-08	PDT	1.00E-07	2.0	1.00E-06
Fluorene	86-73-7	1.26E-08	PDT	1.92E-08	1.5	1.92E-07
Freon 113	76-13-1	3.33E-07	PDT	3.79E-07	1.1	3.79E-06
Heptachlor	76-44-8	4.31E-08	PDT	6.85E-08	1.6	6.85E-07
Heptachlor epoxide	1024-57-3	2.46E-08	PDT	3.66E-08	1.5	3.66E-07
Hexachlorobenzene	118-74-1	1.00E-06	PDT	1.14E-06	1.1	1.14E-05
Hexachlorobutadiene	87-68-3	1.12E-06	PDT	1.30E-06	1.2	1.30E-05
Hexachlorocyclo-pentadiene	77-47-4	7.53E-06	PDT	8.58E-06	1.1	8.58E-05
Hexachloroethane	67-72-1	1.39E-06	PDT	1.60E-06	1.1	1.60E-05
Hydrogen chloride	7647-01-0	1.60E-01	permit limit	1.36E-02 (c)	not applicable (b)	1.36E-01
Indeno(1,2,3-cd)pyrene	193-39-5	5.08E-09	PDT	7.74E-09	1.5	7.74E-08
Iodomethane	74-88-4	1.97E-06	PDT	2.01E-06	1.0	2.01E-05
Isophorone	78-59-1	7.96E-07	PDT	9.11E-07	1.1	9.11E-06
Isopropyl toluene, p-	99-87-6	5.10E-07	PDT	5.82E-07	1.1	5.82E-06
Methoxychlor	72-43-5	5.38E-08	PDT	6.10E-08	1.1	6.10E-07
Methyl Isobutyl ketone (4-methyl-2-pentanone)	108-10-1	2.25E-06	PDT	3.22E-06	1.4	3.22E-05
Methyl methacrylate	80-62-6	5.50E-09	FR&DRE	--	not applicable (b)	5.5E-08
methyl tert-butyl ether	1634-04-4	8.16E-08	FR&DRE	--	not applicable (b)	8.2E-07
Methylene chloride	75-09-2	1.74E-05	PDT	3.12E-05 (c)	1.8	3.12E-04
Naphthalene	91-20-3	3.58E-06	PDT	9.11E-06 (c)	2.5	9.11E-05
Nitrobenzene	98-95-3	7.87E-07	PDT	9.01E-07	1.1	9.01E-06
N-nitrosodimethylamine	62-75-9	9.21E-07	PDT	1.06E-06	1.2	1.06E-05
N-Nitroso-di-n-propylamine	621-64-7	9.63E-07	PDT	1.10E-06	1.1	1.10E-05

Table 3
Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
N-Nitrosodiphenylamine	86-30-6	7.90E-07	PDT	9.14E-07	1.2	9.14E-06
Pentachlorobenzene	608-93-5	8.83E-07	PDT	1.03E-06	1.2	1.03E-05
Pentachloronitrobenzene	82-68-8	1.04E-06	PDT	1.21E-06	1.2	1.21E-05
Pentachlorophenol	87-86-5	1.55E-05	PDT	1.76E-05	1.1	1.76E-04
Perylene	198-55-0	1.34E-08	PDT	3.59E-08	2.7	3.59E-07
Phenanthrene	85-01-8	1.51E-07	PDT	3.14E-07	2.1	3.14E-06
Phenol	108-95-2	1.14E-06	PDT	1.32E-06	1.2	1.32E-05
Phosphine imide, P,P,P-triphenyl	2240-47-3	1.06E-06	PDT	3.17E-06	3.0	3.17E-05
PCBs as Aroclor 1254 (d)	11097-69-1	2.34E-08	PDT	4.18E-08	1.8	4.18E-07
Propylbenzene, n-	103-65-1	4.15E-07	PDT	4.74E-07	1.1	4.74E-06
Propylene oxide	75-56-9	1.00E-09	FR&DRE	--	not applicable (b)	1.0E-08
Pyrene	129-00-0	4.93E-08	PDT	1.02E-07	2.1	1.02E-06
Pyridine	110-86-1	1.85E-06	PDT	2.15E-06	1.2	2.15E-05
Styrene	100-42-5	2.89E-07	PDT	3.29E-07	1.1	3.29E-06
Tetrachlorobenzene, 1,2,4,5-	95-94-3	9.55E-07	PDT	1.11E-06	1.2	1.11E-05
Tetrachloroethane, 1,1,1,2-	630-20-6	2.68E-07	PDT	3.62E-07	1.4	3.62E-06
Tetrachloroethylene	127-18-4	1.12E-04	PDT	2.18E-04 (c)	1.9	2.18E-03
Tetrahydrofuran	109-99-9	4.59E-06	PDT	5.23E-06	1.1	5.23E-05
Toluene	108-88-3	1.18E-05	PDT	2.98E-05 (c)	2.5	2.98E-04
Trichloroethylene	79-01-6	2.63E-06	PDT	4.87E-06	1.9	4.87E-05
Trichlorofluoromethane (Freon 11)	75-69-4	1.27E-06	PDT	2.62E-06	2.1	2.62E-05
Vinyl Acetate	108-05-4	1.52E-06	PDT	1.74E-06	1.1	1.74E-05
Vinyl Chloride	75-01-4	6.75E-07	PDT	8.81E-07	1.3	8.81E-06
Xylene, o-	95-47-6	3.70E-07	PDT	4.90E-07	1.3	4.90E-06
Xylene, m-	108-38-3	5.80E-07	PDT	1.44E-06	2.5	1.44E-05

Table 3

Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Xylene, p-	106-42-3	5.80E-07	PDT	1.44E-06	2.5	1.44E-05
BHC, alpha-	319-84-6	2.14E-08	PDT	2.59E-08	1.2	2.59E-07
Chlordane	57-74-9	5.97E-08	PDT	1.23E-07	2.1	1.23E-06
BHC, beta-	319-85-7	5.53E-08	PDT	6.79E-08	1.2	6.79E-07
BHC, gamma- (lindane)	58-89-9	1.17E-08	PDT	1.32E-08	1.1	1.32E-07
BHC, delta-	319-86-8	4.97E-08	PDT	6.99E-08	1.4	6.99E-07
PCDDs/PCDFs (Dioxins and Furans)						
2,3,7,8-TCDD	1746-01-6	4.37E-11	permit limit	1.20E-11	not applicable (b)	1.20E-10
2,3,7,8-TCDF	51207-31-9	4.20E-10	permit limit	1.47E-11	not applicable (b)	1.47E-10
1,2,3,7,8-PeCDD	40321-76-4	1.16E-10	permit limit	1.05E-11	not applicable (b)	1.05E-10
1,2,3,7,8-PeCDF	57117-41-6	4.29E-10	permit limit	5.49E-12	not applicable (b)	5.49E-11
2,3,4,7,8-PeCDF	57117-31-4	4.45E-10	permit limit	6.11E-11	not applicable (b)	6.11E-10
1,2,3,6,7,8-HxCDD	57653-85-7	7.99E-11	permit limit	6.08E-13	not applicable (b)	6.08E-12
1,2,3,4,7,8-HxCDD	39227-28-6	7.91E-11	permit limit	6.97E-13	not applicable (b)	6.97E-12
1,2,3,7,8,9-HxCDD	19408-74-3	9.35E-11	permit limit	1.01E-12	not applicable (b)	1.01E-11
1,2,3,6,7,8-HxCDF	57117-44-9	2.76E-10	permit limit	6.57E-12	not applicable (b)	6.57E-11
1,2,3,4,7,8-HxCDF	70648-26-9	5.07E-10	permit limit	1.30E-11	not applicable (b)	1.30E-10
1,2,3,7,8,9-HxCDF	72918-21-9	7.33E-11	permit limit	4.48E-13	not applicable (b)	4.48E-12
2,3,4,6,7,8-HxCDF	60851-34-5	1.55E-10	permit limit	3.15E-12	not applicable (b)	3.15E-11
1,2,3,4,6,7,8-HpCDD	35822-46-9	8.20E-11	permit limit	1.94E-13	not applicable (b)	1.94E-12
1,2,3,4,6,7,8-HpCDF	67562-39-4	3.98E-10	permit limit	1.00E-12	not applicable (b)	1.00E-11
1,2,3,4,7,8,9-HpCDF	55673-89-7	9.52E-11	permit limit	1.12E-13	not applicable (b)	1.12E-12
Total OCDD	3268-87-9	1.05E-10	permit limit	3.10E-14	not applicable (b)	3.10E-13
Total OCDF	39001-02-0	5.81E-11	permit limit	1.45E-14	not applicable (b)	1.45E-13

Table 3
Maximum Measured Stack Emission Rates, Emission Rates Used in the Risk Assessment, and Upset Condition Stack Emission Rates

Compound	CAS Number	Stack Emission Rates Used in Risk Assessment (Non-Upset Conditions)		Maximum Measured Stack Emission Rate from PDT (g/sec)	Ratio: Maximum Measured Emission Rate / Average Measured Emission Rate Used in Risk Assessment	Upset Condition Stack Emission Rates Used in Response to Comments (maximum measured emission rate * 10) (g/sec) (d)
		Emission Rate (g/sec) (a)	Basis for Emission Rate			
Combustion Gases						
Sulfur dioxide	7446-09-5	8.69E-02	miniburn data	1.79E-01	2.1	1.79E+00
Nitrogen dioxide	10102-44-0	3.28E-01	miniburn data	3.53E-01	1.1	3.53E+00

-- = This compound was not measured in the Performance Demonstration Test.

FR&DRE = Emission rate based on annual average feed rate and 99.99% destruction and removal efficiency (DRE), because emission rates for this compound were not measured during the PDT. See Section 4.2.1 of the Risk Assessment for additional discussion.

PDT = Performance Demonstration Test.

(a) For compounds measured in the PDT, without proposed permit limits, the emission rate was calculated as the average across the three PDT test runs.

(b) Not applicable is listed because the emission rate used in the risk assessment was either based on a proposed permit limit or was calculated based on feed rate and DRE.

(c) This compound was spiked into the feed materials used during the PDT.

(d) If a compound was not measured in the PDT, and its emission rate was based on feed rate and DRE, its upset emission rate was calculated by increasing the feed rate & DRE based emission rate by a factor of 10.

model for each individual COPC." USEPA further explains that chemical-specific emission rates are used to adjust the ISCST3 unitized output to calculate chemical-specific air concentrations and deposition rates, noting that "concentration and deposition are directly proportional to the unit emission rate used in the ISCST3 modeling."

USEPA also states in Section 3.8.1 of HHRAP, "We advocate using a unit emission rate in the air modeling because you can develop a common ratio relationship between the unit emission rate and the COPC-specific emission rate. The ratio is based on the fact that both individual relationships are linear in the air model. This ratio relationship is expressed by the following equation:"

$$\frac{\text{COPC-specific air concentration } (\mu g/m^3)}{\text{COPC-specific emission rate (g/sec)}} = \frac{\text{Modeled output air concentration } (\mu g/m^3)}{\text{Unit emission rate (1 g/sec)}} \qquad \text{(Equ 2)}$$

In addition, the relationship between chemical air concentration and the acute hazard quotient is also linear. Section 7.4.3 of HHRAP presents the equation used to calculate the hazard quotient as follows:

$$\text{Acute hazard quotient} = \frac{\text{COPC-specific air concentration (acute 1-hour average) } (\mu g/m^3)}{\text{Acute inhalation reference exposure concentration } (\mu g/m^3)} \qquad \text{(Equ 3)}$$

If Equation 2 is solved for COPC-specific air concentration, and this result is substituted into Equation 3, the resulting solution demonstrates that the acute hazard quotient is linearly proportional to emission rate:

$$\text{Acute hazard quotient} = \frac{\text{Modeled output air concentration } (\mu g/m^3) * \text{COPC-specific emission rate (g/sec)}}{\text{Unit emission rate (1 g/sec)} * \text{Acute inhalation exposure concentration } (\mu g/m^3)} \qquad \text{(Equ 4)}$$

In essence, when following HHRAP guidance, air concentrations are linearly proportional to emission rates and hazard quotients are linearly proportional to air concentrations, therefore, hazard quotients are also proportional to emission rates at any given receptor location. As a result, a factor of 10 increase in chemical emission rates will produce a factor of 10 increase in HQs for a given modeled emission source and receptor location when HHRAP acute risk assessment guidance is followed.

ISCST3 Modeling of Air Concentrations for Acute Risk Assessment Under Upset Conditions

USEPA's comment mentions the terms "1-hour average" and "1-hour maximum" as they relate to the "upset stack release concentration." This section clarifies the basis and meaning of the term "1-hour average" air concentration and how it relates to the air concentrations used in the risk assessment.

The HHRAP guidance recommends evaluating risks due to acute exposure based on maximum 1-hour average air concentrations calculated using a dispersion model. The shortest time step that the ISCST3 dispersion model can predict is a 1-hour average period. The term "1-hour average" thus commonly refers to the averaging time associated with this ISCST3 output.

When the ISCST3 model is run to produce results for an acute inhalation risk assessment, it calculates a 1-hour average air concentration for every hour of input meteorological data at each modeled receptor location. The five years of hourly meteorological data input to ISCST3 for the risk assessment, therefore, produced more than 40,000 1-hour average air concentrations at each of the more than 5,200 individual modeled receptor locations beyond the property boundary. The highest of these more than 40,000 1-hour average concentrations at each location was then selected and used to evaluate potential acute inhalation risks in the risk assessment. This means that, for any given receptor location, the 1-hour average air concentrations for all other hours modeled by ISCST3 were lower than the one result used in the risk assessment. This very conservative approach is recommended in HHRAP and was used in the risk assessment and in this response to USEPA's comment.

As indicated in Equation 1 above, chemical air concentrations are calculated by combining unitized ISCST3 model output air concentrations with chemical emission rates. The modeled output air concentrations used to evaluate potential acute risks (both in the risk assessment and in this section) were, as described above, the maximum modeled 1-hour average air concentrations based on a unit 1 g/sec emission rate calculated at each assessed receptor location. The chemical emission rates used to evaluate upset conditions were based on maximum measured values multiplied by USEPA's default factor of 10.

Potential Acute Inhalation Risks Under Upset Conditions

The potential for acute inhalation risks under stack upset conditions, using the inputs described above, was evaluated by re-running the Industrial Risk Assessment Program (IRAP) software in the same manner as applied in the risk assessment, except that in this case the upset emission rates were based on maximum measured values rather than average measured values multiplied by USEPA's upset default factor of 10.

The resulting hazard quotients are presented in Table 4 for the same set of receptor locations already evaluated in the risk assessment. The detailed chemical-specific acute hazard quotient results for this upset stack emissions scenario are included in Attachment A. The cumulative acute hazard index (HI) values, based on exposure to all compounds evaluated regardless of the type of potential health effects, were 0.59 at grid location A_1 and 0.56 at grid location A_2. Summing all hazard quotients regardless of type of health effect is not recommended in HHRAP, but was performed here in response to USEPA Region IX's comment. HHRAP recommends instead that acute hazard quotients from individual compounds be summed if they have similar effects. Given that the cumulative HI across all compounds is less than 1, the sum for subsets with similar types of health effects will also be less than 1.

The likelihood of this upset acute inhalation risk scenario occurring at any given receptor location is expected to be less than 1 in 100,000,000 (one in one hundred million) per year, because it presumes that a stack upset occurs simultaneously with meteorological conditions that produce the maximum 1-hour average air concentration. As noted earlier, detailed facility data from 2000 and 2001 indicate that upset conditions have occurred very infrequently, for only about 0.24% of the time the facility is operating. Also, as described above, the maximum air concentration evaluated in the acute inhalation risk analysis for each location was based on the

Table 4
Acute Inhalation Results - Upset Stack Emissions (a)

Receptor Name	Description	Minimum Hazard Quotient (b)	Maximum Hazard Quotient (b)
Residential Receptors (developed area within and around Town of Parker)			
R_1 resident	Closest residential location to facility and residential area in town with highest hourly modeled impacts	<1E-10	0.2
R_2 resident	Residential area in town with highest annual modeled impacts	<1E-10	0.1
Farmer Receptors (residential area with access to irrigation water and within modeling domain)			
R_3 resident farmer	Residential area with access to irrigation water with highest annual modeled impacts	<1E-10	0.1
R_4 resident farmer	Residential area with access to irrigation water with highest hourly modeled impacts	<1E-10	0.2
Maximum Impact Point (undeveloped land area)			
A_1 max hourly	Maximum impact location for hourly concentrations. There is no residential or commercial land use in the vicinity of the maximum impact location (SW of facility).	<1E-10	0.4
Non-Residential Areas			
A_2 closest business (c)	Closest developed location beyond property boundary (non-residential) with highest hourly modeled impacts	<1E-10	0.4

(a) These results are conservatively based on both maximum upset emission rates and maximum modeled ISCST3 air concentrations. For each specific receptor location, the maximum modeled ISCST3 concentration was the highest 1-hour average result out of the more than 40,000 1-hour averages calculated at that location (i.e., based on input to ISCST3 of 5 years of hourly meteorological data from Parker, Arizona). This means that at each location the concentrations for all other hours were lower than those used to calculate these hazard quotients.

(b) The minimum and maximum results are the lowest and highest hazard quotients, respectively, calculated among all of the evaluated compounds. The typical target hazard quotient value used by regulatory agencies is 1.

(c) The County Agricultural Extension Office and CRIT Realty are located at receptor A_2. Maximum 1-hour average air concentrations at all other non-residential developed land use locations were lower than at receptor A_2.

highest ISCST3 model output calculated out of more than 40,000 hours modeled over a 5-year period. As a result, the probability per year of the maximum 1-hour average modeled concentration occurring during an upset condition is less than 1 in 100,000,000 per year.[8]

Conclusion

These results indicate that short-term acute health effects are not expected to occur in areas near the reactivation facility as a result of inhalation of stack emissions under hypothetical upset conditions.

Comment 4. Upset Conditions (continued)

Comment:
"Finally, the mitigating contention that the constituent-specific emission rates associated with the acute upset scenario are overestimations of the emission rates optimized in the performance demonstration test (PDT) is germane only to the extent that the facility subscribes to a series of permitable conditions which limits constituent-specific emission rates to those exclusively used in the PDT. Other results, and lines of reasoning in this risk assessment suggest that the differences between "evaluated versus measured emission rates" remain a basis for supporting the proposed de minimus level of public health and ecological impact from facility operations."

Response: No response required.

Comment 5. Fate & Transport Air Dispersion Modeling

Comment:
In this comment, USEPA Region IX discusses the "application of Agency-approved air dispersion and deposition computerized fate and transport models" in the risk assessment, explains that the "Data inputs and air dispersion and deposition results were reviewed by air modeling experts in U.S. EPA Region IX's Air Division" and concludes "that the air dispersion and deposition analysis was conducted consistent with the Agency's recommended procedures, and that the results from the modeling exercise are useful to support risk-based analysis."

Response: No response required.

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[8] [(<1/40,000) / 5 years] * (0.24/100) = <1E-8

III. RESPONSE TO SPECIFIC COMMENTS

1. Executive Summary, pg. xii.

Comment:
"The final sentence of the first paragraph should be revised to: 'When excess lifetime cancer risks from both stack and fugitive emissions are considered together, the cancer risk estimate remains below the U.S. EPA target risk level.' "

Response: The executive summary has been revised to incorporate this comment and to reflect the other responses to USEPA's comments. As noted in the Introduction to this document, it is recommended that the entire risk assessment for this project be comprised of three documents: the original July 2007 draft risk assessment report, this response to comment document, and one inclusive executive summary that reflects and incorporates conclusions from both documents. The executive summary is included as a stand-alone companion to this document.

2. Upset Scaling Factors – Section 4.2.1.2, pg. 20 (Stack Emissions)

This comment includes two related items, each of which are addressed below.

2a. Start-up and Shut-down Procedures

Comment:
"The risk assessment concludes that contaminant releases do not occur from the facility's stack during start-up and shut-down procedures. This conclusion is supported by the fact that spent or contaminated carbon is not processed during this operation. Please detail or document all efforts made, or any monitoring data or modeled studies pursued, to characterize the emission profile during start-up or shut-down procedures. The de minimus impact contention from emissions resulting from natural gas initiated start-up, should be well characterized prior to concluding that unit start-up and shut-down procedures do not substantively contribute to either acute or chronic-level human or ecological impact."

Response:

With respect to start-up and shut-down procedures, the risk assessment states that "under these conditions, emissions associated with spent carbon [emphasis added] will not occur." The focus of the RCRA permitting activity for this facility, and accordingly the risk assessment, is on potential environmental releases associated with the management and treatment of spent carbon, not emissions from natural gas.

The carbon regeneration facility, like waste combustion facilities, requires fuel for combustion to create heat and ensure stable operating conditions when spent carbon is being heated in the furnace. Among the fuel options available, natural gas is the only fuel used for the furnace and is the preferred fuel choice from an emissions perspective because it emits lower quantities of greenhouse gases, nitrogen oxides, sulfur dioxide, particulates and mercury when compared to other options such as oil and coal. During typical start-up and shut-down procedures, spent carbon is not present in the furnace and, therefore, there are no emissions associated with spent carbon. Start-up and shut-down conditions account for less than 3% of the total facility operating time.[9]

In response to this comment, potential emission rates associated with natural gas combustion when no spent carbon is in the furnace were calculated and compared to those when spent carbon is being heated in the furnace. Table 5 shows that the natural gas emission rates are consistently lower than those used in the risk assessment and measured during the stack test, generally by several orders of magnitude. Emission rates associated with combustion of natural gas were calculated from typical constituent concentrations reported by the Gas Research Institute (GRI 2000), the natural gas fuel use rate at the facility (approximately 250,000 cubic feet per day), and the reactivation facility system removal efficiencies determined from the PDT (Focus 2006). The calculated emission rates are shown in Table 5 for those compounds with reported natural gas concentrations in GRI (2000) that were also evaluated in the risk assessment. The facility's destruction and removal efficiency (DRE) for organic compounds present in natural gas was conservatively assumed to be 99.99%. The removal efficiencies demonstrated in the PDT for low-volatile and semi-volatile metals were 99.92% and 97.05% for chromium and lead, respectively (Focus 2006).[10] These REs were applied to the other metals in natural gas using USEPA (2001) metal volatility groupings. Emission rates of chlorine and hydrogen chloride (HCl) associated with chlorine present in natural gas were determined based on the PDT test results, which showed that for every pound of chlorine fed into the combustion system, 1.08×10^{-3} pounds of HCl and 1.93×10^{-4} pounds of chlorine would be emitted.[11]

The measured nitrogen oxides (NOx) emission rate that was used in the risk assessment is considered to be a reasonable reflection of potential NOx emissions during periods when the facility is burning natural gas and there is no spent carbon in the furnace. Nitrogen oxides (NOx) generated by combustion include thermal NOx and fuel NOx. Fuel NOx comes from direct oxidation of nitrogen in the fuel or nitrogen present in spent carbon that is being heated. Thermal NOx is generated through high temperature bonding of nitrogen and oxygen in the combustion air and predominantly occurs at the auxiliary fuel burner, which is where natural gas is fired. Considering that the spent carbon contains very little nitrogen, the primary source of NOx in emissions would be natural gas.

In conclusion, potential emissions from the combustion of natural gas at the facility during start-up and shut-down conditions have a negligible impact compared to emissions when spent carbon is being treated and would not substantively contribute to the acute or chronic-level risks calculated in the risk assessment.

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[9] Each start-up and shut-down condition requires about 30 hours and typically there are three start-up and shut-down conditions each year. This amounts to roughly 180 hours per year under start-up and shut-down conditions or about 3% of the total facility operating time.

[10] Metal system removal efficiencies were calculated from data provided in Tables 3-5, 4-9, 4-10, 4-11, and 6-2 in the PDT report (Focus 2006).

[11] See Tables 3-5, 4-6, 4-7, and 4-8 in the PDT report (Focus 2006).

Table 5
Evaluation of Natural Gas Emissions During Start-Up and Shut-Down Procedures

Compound	Typical Concentrations in Natural Gas (a)	Facility Removal Efficiency (b)	Emission Rate for Natural Gas Only (g/sec) (d)	Stack Emission Rates (spent carbon plus natural gas) (g/sec) (e)	
				Emission Rates Used in Risk Assessment	Maximum Measured Stack Emission Rate from PDT
Arsenic (LV)	< 0.2 μg/m3	0.9992	< 1.31E-11	1.26E-04	6.22E-06
Barium (SV)	< 0.05 μg/m3	0.9705	< 1.21E-10	9.01E-06	1.10E-05
Cadmium (SV)	< 0.01 μg/m3	0.9705	< 2.42E-11	3.12E-04	1.31E-05
Chromium (LV)	< 0.01 μg/m3	0.9992	< 6.55E-13	1.26E-04	6.04E-05
Cobalt (LV)	< 0.1 μg/m3	0.9992	< 6.55E-12	5.82E-07	9.38E-07
Copper (LV)	< 0.3 μg/m3	0.9992	< 1.97E-11	1.19E-04	1.80E-04
Lead (SV)	< 0.05 μg/m3	0.9705	< 1.21E-10	3.12E-04	5.60E-04
Manganese (LV)	< 0.2 μg/m3	0.9992	< 1.31E-11	4.61E-05	7.10E-05
Mercury	< 0.01 μg/m3	0	< 8.19E-10	1.34E-06	9.48E-08
Nickel (LV)	< 0.5 μg/m3	0.9992	< 3.28E-11	9.91E-06	1.29E-05
Vanadium (LV)	< 0.2 μg/m3	0.9992	< 1.31E-11	2.43E-06	3.23E-06
Benzene	57,500 μg/m3	0.9999	4.71E-07	2.59E-06	3.02E-06
Chlorine	< 1.6 μg/m3 (c)	NA (c)	< 2.53E-11	3.60E-02	2.25E-03
Ethylbenzene	3,040 μg/m3	0.9999	2.49E-08	3.13E-07	4.51E-07
Hydrogen chloride	< 1.6 μg/m3 (c)	NA (c)	< 1.42E-10	1.60E-01	1.36E-02
PCBs as Aroclor 1254	< 0.13 μg/m3	0.9999	< 1.09E-12	2.34E-08	4.18E-08
Toluene	37,700 μg/m3	0.9999	3.09E-07	1.18E-05	2.98E-05
Xylene, o-	3,500 μg/m3	0.9999	2.87E-08	3.70E-07	4.90E-07
Xylene, m-	10,400 μg/m3	0.9999	8.52E-08	5.80E-07	1.44E-06
Xylene, p-	2,600 μg/m3	0.9999	2.13E-08	5.80E-07	1.44E-06

LV = low volatile metals (USEPA 2001).

SV = semi-volatile metals (USEPA 2001).

(a) Source: Gas Research Institute (GRI). 2000. Analysis of Trace Level Compounds in Natural Gas. GRI-99/0111. February 2000.

(b) Facility removal efficiencies were based on Performance Demonstration Test results (Focus 2006).

(c) The listed concentration is for total chlorine/chloride in natural gas (GRI 2000). Emission rates of chlorine and hydrogen chloride associated with chlorine present in natural gas were determined based on the PDT test results (Focus 2006), which showed that for every pound of chlorine fed into the combustion system, 1.08×10^{-3} pounds of hydrogen chloride (HCl) and 1.93×10^{-4} pounds of chlorine would be emitted.

(d) Emission rate (g/sec) = concentration ug/m3 * g/10^6 ug * flow rate m3/day * day/86,400 sec * (1 - removal efficiency). The typical natural gas flow rate at facility is 250,000 cubic feet/day (7,079 cubic meters/day).

(e) See Table 3 in Response to Comment Document for stack emission rates.

2b. Upset Scaling Factors

Comment:
"The narrative supporting the analysis of upset scaling factors is not clear. An upset scaling factor of 1.02 was developed from historical analysis of the frequency of facility upsets having the potential to increase stack emissions from study years 2001-2002. In essence then, approximately 2% of operational time during the period of interest was interrupted by some level of facility upset. These upsets potentially increase stack emissions by up to 10%. It is not clear from this review why the upset scaling factor has a negligible numerical impact on the chronic stack emission rates as determined by equation 4-1. The basis and data for this conclusion has not been made clear in the narrative. The narrative should be revised to reflect that the increased stack emissions would only occur approximately 220 days out of a total of 10,950 operational days. A similar illustration detailing the magnitude of emission rate differences would also be useful and offer consistency in support of this line of reasoning."

Response:

In response to this comment, the following discussion clarifies the method used to derive the upset scaling factor for the risk assessment, the frequency of time the facility operates under upset conditions, and the impacts of the upset scaling factor on the risk assessment results.

USEPA's Default Scaling Factors

Upset scaling factors were developed for the risk assessment by directly applying HHRAP guidance. Section 2.2.5 of HHRAP recommends "that the stack emission rates estimated from trial burn data be multiplied by an upset factor" and that "when available, site-specific emissions or process data can be useful to estimate the upset factor."

HHRAP provides a default upset scaling factor for metals "by assuming that emissions during process upsets are 10 times greater than emissions measured during the trial burn" and that the facility operates under upset conditions 5% of the year. This produces a default upset scaling factor for metals of 1.45, as follows:

$$\text{Scaling factor}_{(\text{metals})} * \text{ER} = (95/100)*\text{ER} + (5/100)*10*\text{ER} = 1.45_{(\text{metals})} * \text{ER}$$

where ER = emission rate under on non-upset stack conditions.

Similarly, HHRAP provides a default upset scaling factor for organics "by assuming that emissions during process upsets are 10 times greater than emissions measured during the trial burn" and that the facility operates under upset conditions 20% of the year. This produces a default upset scaling factor for organics of 2.8, as follows:

$$\text{Scaling factor}_{(\text{organics})} * \text{ER} = (80/100)*\text{ER} + (20/100)*10*\text{ER} = 2.8_{(\text{organics})} * \text{ER}$$

As discussed earlier in response to General Comment 4, USEPA indicates that these default assumptions are based on a method presented in 1990 by the California Air Resources Board for non-hazardous municipal waste combustors that HHRAP has extrapolated to hazardous waste incinerators. Due to heterogeneity of the feedstock, MSW combustors typically have a more variable range of emissions than hazardous waste incinerators, thus it is anticipated that MSW incinerators will experience upsets resulting in an increase of emissions at a greater frequency than hazardous waste incinerators. An activated carbon regeneration facility is not a hazardous waste incinerator and is intrinsically easier to control than an incinerator due to homogeneity in the feedstock (consisting of only spent carbon). As a result, a carbon regeneration facility should experience a much lower frequency of upsets resulting in an increase in emissions than at an incinerator, thereby ensuring that the default assumptions are likely to be overly conservative when applied to carbon regeneration facilities. In addition, peer review comments received by USEPA on the hazardous waste incinerator methodology pointed out that the default upset factors are "excessively conservative" for those facilities, noting not only that no facility would be allowed to operate under upset conditions for the durations assumed by USEPA but also that upset emissions are not close to 10 times non-upset emissions (USEPA 2005).

In the absence of site-specific information, USEPA's approach assumes that emissions increase by a factor of 10 during upset conditions. A factor of 10 increase in emission rates equates to a 900% increase in emissions, as follows: ((ER*10) – ER) / ER) * 100 = 900%.

Scaling Factors Used in the Risk Assessment: Chronic Risks

In HHRAP, USEPA recommends generating a site-specific upset factor where possible. For example, USEPA explains that site-specific information on the percentage of time, on an annual basis, that the facility operates under upset conditions can be used to estimate the upset scaling factor. In the carbon regeneration facility risk assessment, site-specific information on the percentage of time, on an annual basis, that the facility operates under upset conditions was presented in Table 4.2-2. This information, which was discussed earlier in response to General Comment 4, indicates that the facility operates under upset conditions very infrequently, representing about 0.24% of the total operating time. Based on the annual 2000 and 2001 data where were used in the risk assessment, the facility operated under upset conditions for 16.1 hours out of a total of 6,745 operating hours in 2000[12] and for 18.4 hours out of a total of 7,844 operating hours in 2001.

This site-specific information was used in place of USEPA's defaults in the scaling factor equations shown above to calculate a site-specific scaling factor for both metals and organics of 1.02, as follows:

$$\text{Scaling factor}_{(\text{site-specific})} * ER = (99.76/100)*ER + (0.24/100)*10*ER = 1.02_{(\text{site-specific})} * ER$$

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[12] In 2000, the total operating hours were 6,745 hours, not 7,844 hours as noted in footnote (a) on Table 4.2-2. The hours listed in footnote (a) on Table 4.2-2 for 2000 was a typographical error. The scaling factor for 2000 was, however, calculated using the correct number of operating hours (i.e., 6,745 hours). The total operating hours for 2001 was 7,844 hours.

Note that this calculation incorporates USEPA's conservative default assumption that emission rates increase by a factor of 10 during an upset. This default was used because emissions data during actual facility upsets was not available.

As directed in HHRAP, emission rates for a chronic risk assessment are then calculated by multiplying the non-upset emission rates by the upset scaling factor, as follows:

$$ER_{RA} = ER * USF \qquad \text{(Equ 5)}$$

where ER_{RA} = emission rate for input to risk assessment (g/sec), ER = emission rate based on non-upset stack conditions (g/sec), and USF = upset scaling factor (unitless).

This equation was also shown in the risk assessment (see Equation 4-1 in Section 4.2.1.2).

The upset scaling factor had a negligible numerical impact on the chronic stack emission rates because its value was 1.02, that is, essentially equal to a value of 1. As a result, in the chronic facility risk assessment, the emission rates under non-upset conditions were used without adjustment for the scaling factor.

Scaling Factors Used in the Risk Assessment: Acute Risks

The approach used to identify emission rates for the acute risk assessment differed from that described above for the chronic risk assessment, and was consistent with HHRAP guidance. Potential acute inhalation risks associated with upset conditions were evaluated using upset stack emission rates, combined with maximum unitized air modeling results from ISCST3, as described earlier in response to General Comment 4. The upset stack emission rates were calculated, in according with HHRAP guidance, by assuming that stack emissions would increase by a factor of 10 during upsets. This approach also assumes that the duration of an upset condition would be at least one hour. As noted in response to General Comment 4 above, the likelihood of the acute inhalation scenario occurring is expected to be less than 1 in 100,000,000 (less than one in one hundred million), because it presumes that a stack upset occurs simultaneously with meteorological conditions that produce maximum 1-hour average air concentrations.

2c. Upset Scaling Factors - Dates of data

Comment:
"The narrative supporting this section is not clear and appears inconsistent with graphical representations of the data. Historical upset data is provided for calendar years 2000 & 2001 in table 4.2-2 rather than years 2001 & 2002 as claimed in section 4.2.1.2. Please reconcile this discrepancy."

Response:

The upset data used in the risk assessment were from 2000 and 2001, not 2001 and 2002. The revised narrative therefore reads as follows (edits shown in italics): "SWT identified upset conditions that have the potential to affect stack emission rates, and compiled data on historical upsets at the facility that occurred for these conditions during *2000* and *2001*."

3. Calculation of environmental concentrations – Section 4.2.5, pg. 27

Comment:
"This section of the analysis details the environmental media for which exposure point concentrations will be developed. Please supplement this section by adding "air" to the list of media that will be subject to development of media-specific exposure point concentrations."

Response:

Air is one of the media for which exposure point concentrations were developed. The revised narrative reads as follows (edits shown in italics): "The next step in the exposure assessment was the calculation of chemical concentrations in each environmental medium of interest. These are referred to as exposure point concentrations. For example, concentrations were calculated in *air,* soil, homegrown produce, fish, animal products, and human breast milk."

4. Calculation of human exposures – Section 4.2.6, pg.28
This comment includes two items, each of which are addressed below.

4a. Calculation of human exposures – subsistence scenarios

Comment:
"EPA's guidance reference for conducting risk assessments of combustion facilities recommends impact analysis of several differing human receptor exposure scenarios. Subsistence fishers and subsistence farmers are considered potentially high-end receptors from a contaminant exposure and impact standpoint because, in addition to directly inhaling contaminants released to air, their sources of food and water may also be secondarily impacted by facility releases. To the extent these impacts result from indirect pathways of exposure (ingestion of an impacted food source), potential combined exposures impacting these human receptors is considered high-end, and unlikely to be exceeded by those receptors incurring exposure exclusively from the direct pathways of contaminant exposure."

Response:

Introduction

The following discussion expands on the subsistence exposure scenarios that were addressed in the risk assessment in order to more fully explore potential risks to hypothetical subsistence fisher and subsistence farmer receptors in the facility vicinity. Specifically, this discussion summarizes the hypothetical, high-end subsistence exposure scenarios that were evaluated in the risk assessment and presents additional evaluations in response to Region IX's comment.

Subsistence Exposure Scenarios Addressed in the Risk Assessment

In the risk assessment, fish ingestion risks were calculated for a subsistence scenario and were determined to be below USEPA's target risk levels. Potential risks for the adult and child fisher exposure scenarios incorporated USEPA's default subsistence assumption that 100% of fish ingested were obtained from either the Main Drain or the Colorado River. As shown in Table 4.4-1 of the risk assessment, these receptors were designated as "R_only_fish_drain" and "R_only_fish_river", respectively. The highest excess lifetime cancer risk for the subsistence fisher scenarios was 2E-08 (2 in 100 million), 500 times below USEPA's target cancer risk level of 1E-05 (1 in 100 thousand). The highest non-cancer hazard index for the subsistence fisher scenarios was 0.01, 25 times lower than USEPA's target level of 0.25.

Subsistence farmer exposure scenarios were also addressed in the Discussion of Uncertainties section of the risk assessment (Section 4.5.9) and were determined to be below USEPA's target risk levels. As noted in the risk assessment, site-specific information received from Ms. Linda Masters of the La Paz County Agricultural Extension Office (see response to Specific Comment 4b below) indicated that subsistence (i.e., 100%) reliance on locally-grown produce and locally raised animal products is not applicable to the facility area. The Discussion of Uncertainties Section of the risk assessment, however, nonetheless evaluated potential risks incorporating subsistence assumptions. The subsistence scenarios assumed that 100% of all produce, beef, poultry, eggs and pork ingested by a receptor was locally-grown or locally-raised, compared to the 20% assumption used in the risk assessment (see Table 4.4-1 in the risk assessment). The subsistence evaluation in the Discussion of Uncertainties (Section 4.5.9) addressed the resident and farmer receptors with the highest risks (i.e., receptors R_2 and R_3, respectively, as noted in Table 4.2-7) and focused on all compounds evaluated in the risk assessment, both detected and not detected, except for benzidine (these were referred to as "Group 2" compounds in the risk assessment). As presented in Section 4.5.9, the excess lifetime cancer risks for these subsistence scenarios were 3E-07 for receptor R_2 and 1E-07 for receptor R_3, more than 30 times below USEPA's target cancer risk level of 1E-05.

Additional Subsistence Exposure Scenarios

In response to Region IX's comment, the risk assessment results associated with hypothetical subsistence assumptions were further evaluated in this document. This additional evaluation addressed the three different groups of chemical compounds that were evaluated in the risk assessment:[13]

- *Group 1 - All detected compounds.* This group includes 95 compounds that were detected in the PDT in addition to several compounds that were not measured during the PDT but which were evaluated based on emission rates derived from feed rates.

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[13] The list of chemicals selected for evaluation included compounds that were detected in stack emissions and also over 80 compounds that were not detected. Compounds that were not detectable in stack emissions were included in the risk assessment at the request of USEPA, according to the chemical-selection method in the USEPA-approved 2003 Workplan. This method ensures that risks are likely to be overestimated, and would not be underestimated.

- *Group 2 - All evaluated compounds, both detects and compounds that were not detected, except for benzidine.* This group includes 177 compounds, 82 of which were not detected in the PDT. This group does not include benzidine which was not detected in the PDT in stack gases and for which there is no evidence from waste profile reports and analytical spent carbon data that it has ever been accepted in spent carbon received at the facility. In addition, benzidine is a chemically unstable hetero-nitrogen compound that is not a product of incomplete combustion.[14] Benzidine was singled out because it was found to be a significant risk driver, accounting for most of the total cancer risk when included in the risk calculations.

- *Group 3 - All evaluated compounds.* This group includes 178 compounds, of which 83 were not detected in the PDT, including benzidine.

A summary of the hypothetical subsistence results, in comparison with those presented in Table 4.4-1 of the risk assessment (i.e., the results calculated in the risk assessment using site-specific assumptions), is shown below in Table 6. As can be seen from this table, the risks using subsistence assumptions, even when all selected compounds are evaluated (i.e., Group 3 compounds), remain below USEPA's target levels for both cancer risks (1E-05 target) and non-cancer health effects (0.25 target). When only detected compounds are included, the risks are reduced significantly below USEPA's target risk levels.

Table 7 expands on the subsistence results by presenting cumulative risks for the hypothetical subsistence scenarios. This table shows the combined risks for a subsistence town resident who is also assumed to be a subsistence fisher, and a subsistence farmer who is also assumed to be a subsistence fisher, as compared to the results from Table 4.4-1 in the risk assessment. The potential risks even when added across all subsistence exposure pathways remain below USEPA's target risk levels for both cancer and non-cancer health effects. These potential combined risks for subsistence receptors reflect high-end scenarios that are highly unlikely to be exceeded.

4b. Calculation of human exposures – site-specific exposure information

Comment:
"The current analysis makes use of site-specific exposure assumptions which essentially serve to diminish the concentration of impacted local food sources ingested in support of the subsistence farmer exposure scenario. These community or site-specific intake values were derived from a personal communication reference provided by the La Paz County Agricultural Extension Office (Masters 2007). Please provide reference to any and all data or surveys conducted by the extension office in support of this site-specific value."

Response:

The site-specific information from the La Paz County Agricultural Extension Office was

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[14] Benzidine was used in the past mostly to produce dyes, however, it has not been produced for sale in the U.S. since the mid-1970's. Major U.S. dye companies no longer make benzidine-based dyes, and benzidine is no longer used in medical laboratories or in the rubber or plastics industries (ATSDR 2001).

Table 6
Evaluation of Hypothetical Subsistence Scenarios for Receptors with the Highest Risk Results

Receptor and Group of Evaluated Compounds	**Excess Lifetime Cancer Risk**		**Total Hazard Index**	
	Risk assessment results in Table 4.4-1	**Subsistence scenario (a)**	**Risk assessment results in Table 4.4-1**	**Subsistence scenario (a)**
Town resident receptor (R_2 Adult): ***Receptor in town residential area with highest potential risks and highest annual modeled impacts***				
Group 1 all detected compounds (95 compounds)	6E-08	1E-07	5E-02	5E-02
Group 2 all compounds except benzidine (177 compounds)	2E-07	3E-07	5E-02	5E-02
Group 3 all compounds (178 compounds) (c)	2E-06	9E-06	5E-02	5E-02
Farmer receptor (R_3 Adult): ***Farmer in residential area with access to irrigation water with highest potential risks and highest annual modeled impacts***				
Group 1 all detected compounds (95 compounds)	3E-08	6E-08	1E-02	1E-02
Group 2 all compounds except benzidine (177 compounds)	6E-08	1E-07	2E-02	2E-02
Group 3 all compounds (178 compounds) (c)	5E-07	2E-06	2E-02	2E-02
Subsistence fish ingestion pathway receptor (R_only_fish_drain): ***Fish ingestion evaluation for the Main Drain (b)***				
Group 1 all detected compounds (95 compounds)	1E-08		1E-02	
Group 2 all compounds except benzidine (177 compounds)	1E-08		1E-02	
Group 3 all compounds (178 compounds) (c)	2E-08		1E-02	
USEPA Target Risk Levels				
Target risk levels for combustion source risk assessment	1E-05		0.25	

(a) The subsistence scenarios assume that 100% of all produce, beef, eggs, chicken, and pork ingested by a receptor would be locally-grown or locally-raised. The risk assessment results in Table 4.4-1 assumed, based on site-specific input, that 20% of all produce, beef, eggs, chicken and pork ingested by a receptor would be locally-grown or locally-raised.

(b) The risk assessment evaluated a subsistence fish ingestion scenario, assuming that 100% of all fish ingested would be caught locally. Thus, the results in Table 4.4-1 already reflect a subsistence scenario.

(c) The stack emissions risk results for Group 3 compounds (which includes 83 compounds that were not detected in stack emissions) were dominated by one compound, benzidine, which was not detected stack gases and for which there is no evidence that it has ever been accepted in spent carbon received at the facility.

Table 7
Combined Potential Risks for Hypothetical Subsistence Receptors

Receptor and Group of Evaluated Compounds	**Excess Lifetime Cancer Risk**		**Total Hazard Index**	
	Risk assessment results in Table 4.4-1	**Subsistence scenario**	**Risk assessment results in Table 4.4-1**	**Subsistence scenario**
Town Resident + Subsistence Fisher (a) ***Exposure pathways: inhalation + soil ingestion + produce ingestion + fish ingestion (c)***				
Group 1 – all detected compounds (95 compounds)	7E-08	1E-07	6E-02	
Group 2 – all compounds except benzidine (177 compounds)	2E-07	3E-07	6E-02	
Group 3 – all compounds (178 compounds) (d)	2E-06	9E-06	6E-02	
Farmer + Subsistence Fisher (b) ***Exposure pathways: inhalation + soil ingestion + produce ingestion + fish ingestion + beef ingestion + poultry ingestion + egg ingestion + pork ingestion (c)***				
Group 1 – all detected compounds (95 compounds)	4E-08	9E-08	2E-02	
Group 2 – all compounds except benzidine (177 compounds)	7E-08	1E-07	3E-02	
Group 3 – all compounds (178 compounds) (d)	5E-07	2E-06	3E-02	
USEPA Target Risk Levels				
Target risk levels for combustion source risk assessment	1E-05		0.25	

(a) Adult receptors "R_2" + "R_only_fish_drain".

(b) Adult receptors "R_3" + "R_only_fish_drain".

(c) The results in Table 4.4-1 of the risk assessment assumed that 20% of a person's diet from the following food items was locally grown or raised and ingested - produce, beef, poultry, eggs and pork. It was also assumed that 100% of a person's fish diet was provided by locally caught fish. The subsistence results assume 100% of a person's diet from all evaluated food items are locally grown or raised, and ingested.

(d) The stack emissions risk results for Group 3 compounds (which includes 83 compounds that were not detected in stack emissions) were dominated by one compound, benzidine, which was not detected stack gases and for which there is no evidence that it has ever been accepted in spent carbon received at the facility.

obtained via telephone interviews with Ms. Masters conducted by S. Foster of CPF Associates on June 26, 2007 and July 2, 2007. A summary of the information obtained during these interviews is provided below.

June 26, 2007 interview

Homegrown produce: Not many vegetables are raised in the northern part of the CRIT reservation; there are some backyard gardens in Parker but these won't get much produce; water bill may triple for a town residence with a home garden because of watering needs of crops grown in town; produce can only be grown seasonally, a few months in spring and fall; most produce (e.g., tomatoes, onions, melons) is grown in the southern part of the CRIT reservation near Poston, not near Parker; most crops grown on CRIT reservation are commercial and are shipped out and are not marketed locally. A reasonable estimate for someone living on the CRIT reservation is that 10% of the annual diet could be obtained from home grown produce, and 5% or less for someone living in town. Ms. Masters indicated she would follow up with colleagues on this topic and respond back.

Animal products: CRIT reservation residents buy their meat at the store; animals are raised through 4-H program, perhaps 70 pigs per year, and these animals have to be sold to someone else; people do not butcher their own animals for meat; 1 farmer has 50 head of cattle located beyond 10 km from the facility which are sold; there are no dairy cows and no locally-produced dairy milk on the CRIT reservation; there are no slaughter facilities in the vicinity that she is aware of; people may raise chicken and eggs, and might have pigs or beef cattle; not many chickens raised in the area, though kids might raise chickens sometimes; alfalfa feed for animals is available locally; grain is not grown locally; chickens probably don't have locally grown feed because grain is not grown locally; there is a feed store in the area where animal feed can be purchased.

July 2, 2007 interview

Ms. Masters indicated that she had spoken with many colleagues since the 6/26/07 phone interview and was providing additional information based on this broader input.

Homegrown produce: The types of produce grown in Parker and the irrigated valley are similar but it is very difficult due to climate and soil. Based on the input she received, she estimates that 10% of produce diet may be from home grown produce and cannot see this number being higher than 20%, especially considering there are not extended growing seasons.

Animal products: All feed used for pigs is not local; people may raise lamb and goat, feed for these animals is not obtained locally; no feed for chickens is locally-grown; hay for cattle is obtained locally, but grain not local; among people who might raise animals, they might butcher 1 animal/year and only 20% of their meat diet would be from locally-raised animals; a small number of people raise animals, expects no more than 10% to raise animals for home consumption.

5. Selection of Chemicals for Evaluation – Section 4.3.2, pg. 29 & Tables 4.3.1, 4.3.2 (Fugitive Emissions)

Comment:
"It is not clear from this review the basis for exclusion of chrome as a constituent in the assessment of potential fugitive releases and impacts. Chrome (valence-specific) is considered carcinogenic via the inhalation exposure pathway by several government regulatory agencies and international scientific bodies, and while an inorganic constituent, the metal does enjoy limited volatility under terrestrial conditions. Please reconsider the criteria used for selection of constituents subject to this level of analysis and modify the list of constituents with the stated criteria."

Response:

Introduction

In response to this comment, both total and hexavalent chromium were selected for evaluation in the assessment of potential fugitive emissions from spent carbon unloading. The remainder of this response describes the approaches used to evaluate the two chromium compounds and the risk assessment results. Chromium is generally not considered to be volatile in the environment. The vapor pressure of chromium at 298K calculated from Antoine coefficients is approximately 10E-50 mm Hg. Some specific chromium compounds such as chromium carbonyl and chromium oxychloride are somewhat volatile at ambient temperatures (Yaws 1999), however these compounds are unstable under environmental conditions. Due to these properties, this analysis focuses on the particulate phase rather than the vapor phase.

Chromium Emission Rates

Fugitive emission rates for the two chromium compounds were calculated using the methodology presented in Section 4.3.3.2 and Equation 4-8 in the risk assessment. In this method, inorganic compound emission rates were calculated by multiplying the emission rate of PM10 particles (particles < 10 microns in diameter) in g/sec by the inorganic compound concentration in spent carbon in g/g.

Based on 2003-2006 spent carbon data from the facility, the average concentration of total chromium in spent carbon was 12 parts per million (ppm) or $1.2\text{x}10^{-5}$ g/g (see Table 4.3.1 in the risk assessment). The PM10 emission rate was calculated to be $5.87\text{x}10^{-5}$ g/sec in Table 4.3-6 in the risk assessment. Using these inputs, a total chromium emission rate of $7.0\text{x}10^{-10}$ g/sec was calculated (i.e., PM10 emission rate * total chromium spent carbon concentration).[15]

From a thermodynamic standpoint, activated carbon will reduce chromium and maintain it in a stable chromium III form which will predominate over the unstable hexavalent form. The hexavalent chromium (CrVI) concentration in spent carbon was, however, calculated by

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[15] For example, total chromium emission rate (g/sec) based on average spent carbon concentration = PM10 emission rate of $5.87\text{x}10^{-5}$ g/sec from Table 4.3-6 in the risk assessment * total chromium average concentration in spent carbon of $1.2\text{x}10^{-5}$ g/g = $7.0\text{x}10^{-10}$ g/sec.

assuming that 13% of the total chromium was present as CrVI[16] based on an evaluation of 137 concurrent CrVI and total chromium measurements in monthly composite spent carbon samples from 1994-2006 that were provided to CPF by Siemens. Although CrVI was not detected in 134 of the 137 samples, these data showed that, on average, 13% of the total chromium could potentially be CrVI if all non-detected CrVI results were conservatively assumed to be present at their reported detection limits. If the more commonly employed assumption of one-half the detection limit were used for samples in which CrVI was not detected, roughly 7% of the total chromium could be CrVI; this would produce lower spent carbon concentrations, lower air concentrations, and lower risks than calculated in response to this Region IX comment. Based on a conservatively assumed CrVI concentration in spent carbon of 1.6×10^{-6} g/g (13% of the total chromium), the CrVI emission rate was calculated to be 9.4×10^{-11} g/sec.[17]

Ambient Air Concentrations

Ambient air concentrations of total chromium and CrVI were calculated using the standard USEPA method described in HHRAP guidance and used in the risk assessment. In this method, as discussed previously in response to General Comment 2 and indicated in Equation 1 shown earlier in this document, air concentrations are calculated by multiplying unitized ISCST3 air dispersion modeling results (i.e., unitized concentrations in $\mu g/m^3$ based on a 1 g/sec emission rate) by the chemical emission rates in g/sec.

Potential ambient air concentrations associated with fugitive emissions in the risk assessment were modeled both on site, at the maximum on-site impact location, and off site, at a variety of receptor locations, using the same approaches applied in the risk assessment. The off-site locations are described in Table 4.3-8 in the risk assessment and include four residential receptor locations, two farmer receptor locations, two maximum off-site impact points on undeveloped land, and the closest maximally impacted non-residential business receptor location.

Risk Characterization

Potential risks associated with the chromium ambient air concentrations were evaluated using the same methods applied in the risk assessment. For off-site receptors, off-site ambient air concentrations and associated risks were calculated using the IRAP software program. For the on-site worker analysis, on-site ambient air concentrations and their comparison to occupational exposure limits were calculated using an excel spreadsheet.

Inclusion of the chromium compounds in the off-site fugitives risk assessment did not change the risk assessment conclusions. The numerical risk results for the fugitive evaluation were presented in the risk assessment in Table 4.4-4 (chronic inhalation risks) and Table 4.4-5 (acute inhalation risks); these results are all well below USEPA target risk levels and are unchanged by the addition of chromium. The detailed chemical-specific results from the revised off-site fugitives risk assessment, now including total chromium and CrVI, are presented in Attachment B. This attachment provides the same data that were included in the risk assessment in Appendix J (chronic inhalation risks) and Appendix K (acute inhalation risks), with the addition

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[16] CrVI concentration (g/g) = 1.2×10^{-5} g/g total Cr * 0.13 = 1.6×10^{-6} g/g CrVI.

[17] CrVI emission rate (g/sec) = PM10 emission rate of 5.87×10^{-5} g/sec * CrVI concentration in spent carbon of 1.6×10^{-6} g/g = 9.4×10^{-11} g/sec.

of the two chromium compounds. The total chromium and CrVI results in Attachment B are many orders of magnitude below the chronic and acute USEPA target risk levels.

The conclusions of the on-site workplace evaluation also did not change after total chromium and CrVI were added to the fugitives risk assessment in that the on-site concentrations were well below occupational exposure limits. The calculated on-site maximum 8-hour average chromium air concentrations and associated occupational exposure limits are presented in Table 8. As can be seen, the on-site air concentrations were significantly lower than the 8-hour average OSHA and NIOSH exposure limits.

6. Fugitive Organic Vapor Emissions & Hazard – Section 4.3.3.1, pg.30

Comment:

"The human health and ecological impacts assessed from fugitive releases were determined from facility activities (spent carbon unloading) or sources with the potential for maximum or high-end contaminant releases. Non-cancer or systemically toxic compounds are assessed in this analysis by a cumulative approach which considers the total concentration of those compounds in an exposure scenario germane to the impacted receptor. It is not clear from this review why the non-cancer or systemically-toxic hazard potentially incurred from fugitive releases was not considerate of the combined exposures from both the outdoor spent-carbon unloading hopper (H-1) operations, in addition to the source and activity generating fugitive emissions from other facility operations (hopper H-2)? This estimate of cumulative hazard would more closely capture the entire range of potential exposures incurred by human receptors."

Response:

A detailed review of facility operations was conducted during the Workplan stage of this risk assessment process, in 2003, in order to select a potential fugitive emissions source most likely to impact ambient air. This review, which is presented in Section 4.3 of the 2003 Workplan and reprinted here as Attachment C, provided an overview of potential sources of fugitive emissions related to spent carbon at the facility in addition to a discussion of regulatory requirements, and engineering and institutional controls that are in place to minimize potential fugitive emissions. Based on this review, the Workplan (which was approved by USEPA prior to performing the risk assessment) indicated that the potential fugitive emission source related to spent carbon considered most likely to impact ambient air is the unloading of spent carbon at the outdoor hopper (H-1) and that this emission source would be addressed in the risk assessment.

In addition to the reasons outlined in Attachment C for selecting the outdoor hopper (H-1) for detailed evaluation in the risk assessment, potential fugitive emissions from H-1 were considered more likely to impact outdoor ambient air for a number of reasons. First, most of the spent carbon received at the facility is unloaded at H-1. For example, between 82%-86% of the spent carbon received at the facility annually during 2005 and 2006 was unloaded into the outdoor hopper from a variety of different bulk container types (e.g., roll-off containers, slurry trucks). The remainder of spent carbon received at the facility was unloaded indoors inside the spent carbon storage and warehouse building into hopper H-2 (e.g., drums, supersacks). Second, while

Table 8
On-Site Air Concentrations Associated with Fugitive Chromium Emissions and Comparison to Occupational Exposure Limits

Compound	Maximum On-Site 8-Hour Average Air Concentration (mg/m^3) (a)	Occupational Exposure Limits (mg/m^3) (b)		Comparison of Maximum Modeled 8-Hour Average Concentrations to Occupational Exposure Limits	
		NIOSH Reference Exposure Limit (8-hr TWA REL)	OSHA Permissible Exposure Limit (8-hr TWA PEL)	Ratio - Air Concentration/ NIOSH REL	Ratio - Air Concentration/ OSHA PEL
Total Chromium (c)	1.2E-08	0.5	0.5	2E-08	2E-08
Chromium VI (d)	1.5E-09	0.001	0.005	2E-06	3E-07

TWA = time-weighted average.

(a) Air concentration (mg/m3) = emission rate (g/sec) * maximum 8-hour average unit air concentration (16,426 ug/m3 per 1 g/sec) * mg/1,000 ug.

(b) Sources: OSHA PELS - www.osha.gov/pls/oshaweb. NIOSH RELs - www.cdc.gov/niosh/npg.

(c) The listed OSHA PEL for chromium is based on CrIII and CrII. The value for chromium metals and insoluble salts is slightly higher, at 1 mg/m3.

(d) The listed NIOSH REL for CrVI is a 10-hr TWA.

both hoppers are equipped with an air exhaust system, which directs collected air to a fabric filter baghouse and carbon adsorber, potential fugitive emissions to outdoor air are considered more likely to occur from H-1 due to its outdoor location and its configuration. The outdoor hopper is an enclosed three-walled free standing building with a fixed roof and heavy long plastic sheeting on the fourth side where spent carbon is unloaded. At the face of hopper H-1 where unloading occurs, fugitive emissions have the potential to occur during unloading operations.

Additionally, the method used to calculate fugitive emissions from hopper H-1 in the risk assessment did not take into account the beneficial effect of the air exhaust system. The calculated emission rates assumed, instead, that all fugitive emissions during unloading were directly released to outdoor ambient air. This approach assumed that no fugitive emissions were captured by the exhaust system and thus none were directed through the particulate and organic vapor pollution control systems. This unrealistic, albeit conservative, assumption is expected to overestimate potential ambient air concentrations, and thus potential risks, associated with fugitive emissions.

Finally, as discussed above in response to General Comment 2, it is important to recognize that all workers involved in spent carbon unloading operations wear respirators in addition to protective clothing. When handling any spent carbon (whether it is classified as non-hazardous or hazardous), a half-face respirator with organic and dust control cartridges is worn by workers. Workers also wear company-supplied shorts, pants, steel-toed boots, hard hat and safety glasses. The facility's worker health and safety program additionally includes training, medical monitoring, and hazard communication.

7. Risk Characterization – Section 4.4.1.1, pg.39 (Stack Emissions)

Comment:

"It would be useful to provide a table supporting this narrative which detailed those constituents which significantly influenced the receptor-specific risk estimates, but whose rate of emission was not consistent with the emission rate optimized in the performance demonstration test (PDT). Cadmium and benzidine are illustrative of this phenomenon."

Response:

Table 9 was prepared to detail those constituents which significantly influenced the receptor-specific excess lifetime cancer risk estimates. This table focuses on the receptors with the highest risk results, indicating the dominant compounds affecting the results and providing background on the basis of each compound's emission rate used in the risk assessment. The risks are presented for the three groups of compounds addressed in the risk assessment, as described earlier in response to Specific Comment 4. The results, which are discussed in Section 4.4.1.1 of the risk assessment, are all below USEPA's target cancer risk level of 1E-5 (one in 100,000) over a 70-year lifetime.

A similar table was not prepared for the non-cancer risk results because the non-cancer hazard index values, and the dominant compounds, were essentially the same across the three groups of

Table 9
Dominant Compounds Contributing to Excess Lifetime Cancer Risks Associated with Stack Emissions

Receptor and Group of Evaluated Compounds	Excess Lifetime Cancer Risks (a)	Dominant Compounds (% Contribution to Risk Result)
Town Resident receptor (R_2 Adult): *Receptor in town residential area with highest potential risks and highest annual modeled impacts*		
Group 1 – all detected compounds (95 compounds)	6E-08	- Cadmium (94%) (b)
Group 2 – all compounds except benzidine (177 compounds)	2E-07	- Cadmium (36%) (b) - Arsenic (38%) (c) - Beryllium (17%) (d)
Group 3 – all compounds (178 compounds)	2E-06	- Benzidine (92%) (e)
Farmer receptor (R_3 Adult): *Farmer in residential area with access to irrigation water with highest potential risks and highest annual modeled impacts*		
Group 1 – all detected compounds (95 compounds)	3E-08	- Cadmium (75%) (b) - PCDDs/PCDFs (23%) (f)
Group 2 – all compounds except benzidine (177 compounds)	6E-08	- Cadmium (33%) (b) - PCDDs/PCDFs (10%) (f) - Arsenic (36%) (c) - Beryllium (16%) (d)
Group 3 – all compounds (178 compounds)	5E-07	- Benzidine (87%) (e)
Subsistence fish ingestion pathway receptor (R_only_fish_drain): *Fish ingestion evaluation for the Main Drain*		
Group 1 – all detected compounds (95 compounds)	1E-08	- PCDDs/PCDFs (88%) (f)
Group 2 – all compounds except benzidine (177 compounds)	1E-08	- PCDDs/PCDFs (71%) (f)
Group 3 – all compounds (178 compounds)	2E-08	- PCDDs/PCDFs (53%) (f) - Benzidine (36%) (e)

PDT Performance Demonstration Test.

PCDDs/PCDFs – polychlorinated dibenzo-p-dioxins and polychlorinated dibenzo furans.

(a) The cancer risks were obtained from Table 4.4-1 in the risk assessment. They reflect the additional excess lifetime cancer risks from exposure to all potential carcinogens evaluated. These risk results are all lower than the regulatory target cancer risk level used by USEPA for combustion sources of 1E-05 (1 in 100,000).

(b) Cadmium was evalauted using an emission rate based on a proposed permit limit that was >30 times higher than measured during the PDT.

(c) Arsenic was not detected in the PDT but was evaluated in the risk assessment using an emission rate based on a proposed permit limit.

(d) Beryllium was not detected in the PDT but was evaluated in the risk assessment using an emission rate based on a proposed permit limit.

(e) Benzidine was not detected in the PDT and there is no evidence from waste profile reports and analytical spent carbon data that it has ever been accepted in spent carbon received at the facility. It was evaluated using an emission rate based on its PDT-reported detection limit.

(f) PCDDs/PCDFs were evaluted using an emission rate based on a proposed permit limit that was about 4 times higher than measured during the PDT. The feed used during the PDT was spiked to maximize production of combustion by-products such as PCDDs/PCDFs.

compounds evaluated (i.e., Groups 1, 2 and 3). The hazard index values for stack emissions were lower than the conservative non-cancer target level of 0.25 used by USEPA for evaluating combustion sources. As described in Section 4.4.1.1 of the risk assessment, the dominant compounds affecting the hazard index results were chlorine, for the resident and farmer receptors, and methyl mercury for the fish ingestion pathway. Chlorine was evaluated in the risk assessment using an emission rate based on a proposed permit limit that was much higher than measured in the PDT, even though many chlorine-containing compounds were spiked into the feed during the PDT. Similarly, mercury was evaluated using a permit limit-based emission rate that was higher than measured in the PDT. These results indicate that chronic non-cancer adverse health effects would not occur due to stack emissions from the carbon reactivation facility.

8. Acute Short-term Risks – Section 4.4.1.4, pg.41 (Stack Emissions)
This comment includes two items, each of which are addressed below.

8a. Acute Short-term Risks – Calculation of Maximum Concentrations

Comment:
"The current assessment evaluated the impact from acute or short-term inhalation exposures from stack emissions by comparing the 1-hr average air concentrations (model derived) with acute reference thresholds. Results from this comparison demonstrated that the non-cancer or systemically toxic hazard thresholds were not exceeded. Determination of acute inhalation impacts should be derived from comparison of the 1-hr maximum stack concentrations with acute thresholds rather than 1-hr average maximum stack concentrations. Results from this level of analysis would better inform and therefore reduce the level of uncertainty inherent in the acute level impact characterization."

Response:

The acute risk assessment evaluation for stack emissions was modified, in response to this comment, by using maximum measured stack emission rates. This approach differs from the risk assessment which, as described in the Workplan, used average emission rates derived across the three PDT test runs. As noted earlier in response to General Comment 4, and as described in Section 4.5.2 of the risk assessment, the differences between the average and maximum measured stack emission rates for those compounds with emission rates based on stack test data were not substantial, and ranged from a factor of 1.0 (i.e., no change) to a factor of 3.0. The maximum measured emission rates are listed in Table 2 in response to General Comment 4.

In this analysis, the maximum measured emission rates were used for those compounds with emission rates based on stack test data. For the remaining compounds (i.e., those with emission rates based on proposed permit limits or calculated based on feed rate and destruction and removal efficiency), the emission rates for this acute analysis were the same as those used in the chronic risk assessment (see Table 2).

The potential acute inhalation risks were evaluated by re-running the IRAP software program in the same manner as applied in the risk assessment. The resulting hazard quotients are presented in Table 10 for the same set of receptor locations evaluated in the risk assessment. The detailed chemical-specific acute hazard quotients for this stack emissions scenario are included in Attachment D.

All of the hazard quotients (HQs) at all receptor locations were well below the target level of 1.0, indicating that adverse acute health effects would not occur due to stack emissions at locations beyond the property boundary. The highest HQ values were calculated at grid location A_1 (0.08) and A_2 (0.04). These results were unchanged from the original risk assessment (see Table 4.4-3 in the risk assessment report).

The cumulative acute hazard index (HI) values, based on the sum of all hazard quotients and assuming exposure to all compounds evaluated regardless of the type of potential health effects, were 0.2 at grid location A_1 and 0.1 at grid location A_2, still well below a target of 1.0. The corresponding cumulative hazard index results from the risk assessment using average measured stack emission rates (see Appendix H of the risk assessment) were 0.1 at A_1 and 0.09 at A_2, only slightly lower than calculated here using maximum measured emission rates. These results confirm that the acute risk assessment results are negligibly different whether using average or maximum stack emission rates.

It should be noted that summing all hazard quotients together regardless of type of health effect is not recommended in HHRAP, but was performed here in response to General Comment 4. HHRAP recommends that acute hazard quotients from individual compounds be summed if they have similar effects. Given that the cumulative HI values across all compounds were less than 1, the sum for any subsets with similar types of health effects will also be less than 1.

8b. Acute Short-term Risks – Acute Hazard Quotients

Comment:
"An acute hazard quotient above one may indicate and increased chance of developing health endpoints more profound than the mild transient adverse health effects described in the report. The specific health endpoint is constituent-specific and has been detailed in the reference documents used to support acute reference levels."

Response: No response necessary.

9. Evaluation of Lead – Section 4.4.1.5, pg. 43

Comment:
"EPA's Integrated Exposure Uptake Biokinetic Model (IEUBK) for lead in children is designed to predict a child's blood-lead concentration from multimedia exposure pathways. While EPA's combustion guidance reference for risk analysis recommends application of the model in the context of combustion-unit risk assessments when the lead in soil concentrations exceed health-based levels (400 mg/kg), it is not clear from this review the manner in which potential lead exposure and the resultant blood-lead level impact from the direct pathway of human exposure (inhalation) can be assessed without model application. The IEUBK model should be considered to reduce uncertainties associated with potential lead impacts on proximate receptors."

Table 10

Acute Inhalation Results - Maximum Measured Stack Emissions (a)

Receptor Name	Description	Minimum Hazard Quotient (b)	Maximum Hazard Quotient (b)
Residential Receptors (developed area within and around Town of Parker)			
R_1 resident	Closest residential location to facility and residential area in town with highest hourly modeled impacts	<1E-10	0.02
R_2 resident	Residential area in town with highest annual modeled impacts	<1E-10	0.01
Farmer Receptors (residential area with access to irrigation water and within modeling domain)			
R_3 resident farmer	Residential area with access to irrigation water with highest annual modeled impacts	<1E-10	0.01
R_4 resident farmer	Residential area with access to irrigation water with highest hourly modeled impacts	<1E-10	0.02
Maximum Impact Point (undeveloped land area)			
A_1 max hourly	Maximum impact location for hourly concentrations. There is no residential or commercial land use in the vicinity of the maximum impact location (SW of facility).	<1E-10	0.08
Non-Residential Areas			
A_2 closest business (c)	Closest developed location beyond property boundary (non-residential) with highest hourly modeled impacts	<1E-10	0.04

(a) These results are conservatively based on both maximum measured stack emission rates and also maximum modeled unitized ISCST3 air concentrations. For each specific receptor location, the maximum modeled ISCST3 unitized concentration was the highest 1-hour average result out of the more than 40,000 1-hour averages calculated at that location (i.e., based on input to ISCST3 of 5 years of hourly meteorological data from Parker, Arizona). At each location the concentrations for all other hours were lower than those used to calculate these hazard quotients.

(b) The minimum and maximum results are the lowest and highest hazard quotients, respectively, calculated among all of the evaluated compounds. The typical target hazard quotient value used by regulatory agencies is 1.

(c) The County Agricultural Extension Office and CRIT Realty are located at receptor A_2. Maximum 1-hour average air concentrations at all other non-residential developed land use locations were lower than at receptor A_2.

Response:

In response to this comment, potential lead exposures were evaluated using the IEUBK model (USEPA 2002, Version 1.0.264). Inputs to the IEUBK model include background exposures to lead in addition to lead exposures associated with facility stack emissions.

Background lead exposures were based on the USEPA defaults incorporated in the IEUBK model with the exception of background air and soil lead concentrations, for which data specific to Arizona were compiled. Background levels in air were based on ambient air measurements from Maricopa, Pima and Yavapai Counties reported in AZDEQ (1999) (no data were available for La Paz, Mohave or Yuma Counties). Note that lead is no longer routinely measured in ambient air by AZDEQ because concentrations have declined to very low levels in response to regulatory controls (AZDEQ 2007). Background soil levels were based on surface soil measurements from Yuma and Mohave Counties reported in USGS (1981) (data were not available for La Paz County in the USGS report).

Potential lead exposures associated with facility stack emissions were compiled for the resident child and farmer child receptors that were calculated to have the highest lead intakes in the risk assessment (referred to as receptors R_2 and R_3). The facility-specific IEUBK inputs for these receptors included air and soil lead concentrations at each receptor location, in addition to dietary lead intakes. These inputs were compiled from the risk assessment results calculated using the IRAP software program which, as described in the risk assessment, calculates lead exposures and risks using USEPA's HHRAP methods and inputs. Table 11 presents the lead concentrations and dietary intakes associated with stack emissions that were calculated using IRAP and used in the IEUBK model.

The IEUBK inputs and outputs are summarized in Table 12. The model outputs were compared to the USEPA target blood lead level of 10 µg/dL (USEPA 2002). As shown in Table 12, the model predicted no blood lead elevation compared to that predicted by exposure to background. The predicted blood lead levels were all lower than those measured among children in Yuma County, Arizona as part of the Arizona/Sonora blood lead study (mean blood lead level = 3.1 µg/dL; 95% confidence interval = 2.9-3.3 µg/dL) (Cowan et al. 2006). The blood lead levels associated with background, and background plus potential facility impacts, were all below USEPA's target level. The probability of the target level being exceeded, which is an output of the IEUBK model, was 0.01% for all model runs. These results indicate that adverse health effects due to lead exposure would not occur as a result of facility stack emissions.

10. Acute Short-term Risks – Section 4.4.2.2, pg. 44 (Fugitive Emissions)
This comment includes a number of items, each of which is addressed below.

10a. Acute Short-term Risks – Maximum Modeled Fugitive Emission Rates

Comment:
"An acute or short-term analysis of fugitive releases from the facility's spent-carbon hopper loading activities was conducted to assess the magnitude of acute impacts. Rather than applying the 1-hr average air concentration from modeled releases in support of this analysis, the 1-hr

Table 11

Potential Lead Concentrations and Dietary Intakes Associated with Stack Emissions

Risk Assessment Results (a)	Resident child receptor (R_2) (b)	Farmer child receptor (R_3) (b)	Units
Air Concentration	6.9E-05	2.0E-05	ug/m3
Soil Concentration	2.7E-04	2.8E-05	ug/g
Dietary intake (1-7 year old child)			
Produce	1.95E-03	3.00E-04	ug Pb/day
Beef	NA	6.30E-06	ug Pb/day
Fish (Main Drain)	3.90E-10	3.90E-10	ug Pb/day
Fish (Colorado River)	1.38E-09	1.38E-09	ug Pb/day
Total	2.0E-03	3.1E-04	ug Pb/day

NA = not applicable for this receptor.

(a) The reported results were calculated in the risk assessment using the IRAP software program (see Section 4.2 in the risk assessment report).

(b) Results are presented for the resident child and farmer child receptors with the highest intakes calculated in the risk assessment : R_2 resident and R_3 farmer.

Table 12
Lead Exposure Evaluation Using USEPA's IEUBK Model

Information	AZ background (a,b) + USEPA diet defaults	Potential facility contribution + background (c)	
		Resident child receptor (R_2)	Farmer child receptor (R_3)
Model Inputs			
Air concentration (μg/m3)	0.01	0.010069	0.01002
Soil concentration (μg/g)	27	27.00027	27.000028
Dietary intake (μg/day)			
.5-1 years	5.53	5.532	5.5303
1-2 years	5.78	5.782	5.7803
2-3 years	6.49	6.492	6.4903
3-4 years	6.24	6.242	6.2403
4-5 years	6.01	6.012	6.0103
5-6 years	6.34	6.342	6.3403
6-7 years	7.00	7.002	7.0003
Model Outputs			
Blood Pb Concentration (ug/dL)			
.5-1 years	2.0	2.0	2.0
1-2 years	2.0	2.0	2.0
2-3 years	1.9	1.9	1.9
3-4 years	1.8	1.8	1.8
4-5 years	1.6	1.6	1.6
5-6 years	1.5	1.5	1.5
6-7 years	1.4	1.4	1.4
Probability of Pb blood concentration greater than USEPA's 10 μg/dL target			
Probability	0.01%	0.01%	0.01%

(a) Background levels in air were based on data in AZDEQ (1999).
(b) Background soil levels were based on Arizona surface soil measurements reported in USGS (1981).

(c) The facility contribution was evaluated for the resident child and farmer child receptors with the highest intakes calculated in the risk assessment : R_2 resident and R_3 farmer.
Facility contribution for R_2 included air, soil and diet (produce + fish).
Facility contribution for R_3 included air, soil and diet (produce + beef + fish).

maximum concentration should be applied to determine the magnitude of acute impacts associated with fugitive releases. Further, the cumulative hazard index for all compounds should be clearly detailed in the supporting narrative, and only when this value exceeds the target threshold, should a target-organ segregation approach be applied in the context of risk characterization."

Response:

In response to this comment, emission rates for the acute fugitives risk evaluation were re-calculated using maximum rather than average spent carbon concentrations. These revised maximum emission rates were then input into the IRAP software program to recalculate potential acute risks associated with fugitive releases during unloading activities.

Maximum Modeled Fugitive Emission Rates

Table 2, shown earlier in this document, presents the mathematically modeled maximum fugitive chemical emission rates, as well as the maximum concentrations in spent carbon unloaded at the outdoor hopper, and the number of deliveries with this maximum concentration relative to the total number of deliveries.

ISCST3 Modeling of Short-Term Unitized Air Concentrations

Equation 1, presented earlier in this document, shows the HHRAP method for calculating chemical-specific air concentrations. In this method, unitized ISCST3 model output air concentrations are multiplied by chemical-specific emission rates. The unitized ISCST3 air concentration at each receptor location was the maximum modeled 1-hour average air concentration based on a unit 1 g/sec emission rate. The chemical-specific emission rates were calculated as described above.

HHRAP recommends evaluating risks due to acute exposure based on maximum 1-hour average air concentrations calculated using a dispersion model. The shortest time step that the ISCST3 dispersion model can predict is a 1-hour average period. The term "1-hour average" thus commonly refers to the averaging time associated with this ISCST3 output.

The ISCST3 model calculates a 1-hour average unitized air concentration (i.e., $\mu g/m^3$ per 1 g/sec) for every hour of input meteorological data at each modeled receptor location. The five years of hourly meteorological data input to ISCST3 for the risk assessment, therefore, produced more than 40,000 1-hour average air concentrations at each of the more than 5,200 individual modeled receptor locations beyond the property boundary. The highest of these more than 40,000 1-hour average concentrations at each location was then selected for use in evaluating potential acute inhalation risks in the risk assessment. This very conservative approach is recommended in HHRAP and was used in the risk assessment and in response to this Region IX comment.

The maximum 1-hour average unitized concentration modeled by ISCST3 at each location reflects a specific set of meteorological conditions that produce less dispersion and higher air concentrations than for any of the other more than 40,000 modeled hours. This means that the maximum short-term air concentrations, and thus the acute risks derived from them, have a very low probability of occurrence. It also means that the short-term air concentrations for every other hour modeled at each receptor location were lower than the maximum used in the risk assessment.

Potential Acute Inhalation Risks

The potential acute inhalation risks associated with the maximum modeled fugitive emission rates and the maximum unitized ISCST3 modeled short-term air concentrations were evaluated by re-running the IRAP software program in the same manner as applied in the risk assessment.

The resulting hazard quotients are presented in Table 13 for the same set of receptor locations evaluated in the risk assessment (see Table 4.4-5 in the risk assessment). The detailed chemical-specific acute hazard quotients for this fugitive emissions scenario are included in Attachment E.

All of the hazard quotients (HQs) at all receptor locations were below the target level of 1.0, indicating that adverse acute health effects are not expected to occur due to fugitive hopper emissions, even when spent carbon containing maximum concentrations are unloaded at the outdoor hopper. The highest HQ values were calculated at grid location A_3 (0.4) and A_2 (0.02). Note that grid location A_3 is on the facility property boundary; beyond this location there is undeveloped land that is not used for residential or commercial purposes. The cumulative acute hazard index (HI) values, based on the sum of all hazard quotients and assuming exposure to all compounds evaluated regardless of the type of potential health effects, were 0.6 at grid location A_3 and 0.03 at grid location A_2, still below the target of 1.0.

These results corroborate the conclusions of the risk assessment. They indicate that short-term health effects are not expected to occur in areas near the facility as a result of inhalation exposure to fugitive emissions during spent carbon unloading at the outdoor hopper, individually or in combination with risks from stack emissions.

10b. Acute Short-term Risks – On-Site Evaluation of Short-term Exposure Limits

Comment:
"The fugitive release acute analysis suggests that on-site receptors incur maximal impacts from fugitive releases (hopper activities). While the narrative in this section identifies the location of maximal off-site impacts and the resultant hazard estimates, the magnitude of on-site impact associated with this exposure scenario should also be identified (10 m north of hopper) and discussed. A fugitive release, on-site acute analysis comparing short-term occupational standards (STELs) to maximum predicted air concentrations should also be considered."

Table 13
Acute Inhalation Results - Maximum Fugitive Emissions During Spent Carbon Unloading at the Outdoor Hopper (a)

Receptor Name	Description	Minimum Hazard Quotient (b)	Maximum Hazard Quotient (b)
Residential Receptors (developed area within and around Town of Parker)			
R_1 resident	Closest residential location to facility, residential area in town with highest hourly modeled impacts for stack emissions	<1E-9	0.001
R_2 resident	Residential area in town with highest annual modeled impacts for stack emissions	<1E-9	0.0009
R_5 resident	Residential area in town with highest hourly modeled impacts for fugitive hopper emissions	<1E-9	0.001
R_6 resident	Residential area in town with highest annual modeled impacts for fugitive hopper emissions	<1E-9	0.0005
Farmer Receptors (residential area with access to irrigation water and within modeling domain)			
R_3 resident farmer	Residential area with access to irrigation water with highest annual modeled impacts (stack and fugitive hopper emissions)	<1E-9	0.0007
R_4 resident farmer	Residential area with access to irrigation water with highest hourly modeled impacts (stack and fugitive hopper emissions)	<1E-9	0.0009
Maximum Impact Point (undeveloped land area)			
A_1 max hourly (stack)	Maximum stack emissions impact location for hourly concentrations. There is no residential or commercial land use in the vicinity of the maximum impact location (SW of facility).	<1E-8	0.007
A_3 max hourly (fugitives)	Maximum fugitive hopper emissions impact location for hourly concentrations. Occurs on northern facility property boundary. There is no residential or commercial land use in the vicinity of the maximum impact location.	<1E-7	0.4
Non-Residential Areas			
A_2 closest business (c)	Closest developed location beyond property boundary (non-residential) with highest hourly modeled impacts	<1E-9	0.02

(a) These results are based on both maximum fugitive chemical-specific emission rates and maximum modeled ISCST3 unitized 1-hour average air concentrations calculated for each specified receptor location. The ISCST3 air concentrations for all other hours were lower than those used to calculate these hazard quotients.

(b) The minimum and maximum results are the lowest and highest hazard quotients, respectively, calculated among all of the evaluated compounds. The typical target hazard quotient value used by regulatory agencies is 1.

(c) The County Agricultural Extension Office and CRIT Realty are located at receptor A_2. Maximum 1-hour average air concentrations at all other non-residential developed land use locations were lower than at receptor A_2.

Response:

Section 4.4.2.2 of the risk assessment addresses potential off-site impacts to public health. On-site impacts are addressed in Section 4.4.4 of the risk assessment and also in response to General Comment 2.

In response to this comment, an on-site acute analysis was conducted to compare short-term occupational exposure limits to maximum modeled on-site air concentrations. Short-term exposure limits (STELs) have been developed by NIOSH and OSHA for varying short-term durations. For example, STELs are defined as 15-minute time-weighted average concentrations that should not be exceeded at any time during a workday. Ceiling limits are maximum peak values not to be exceeded at any time.

Table 14 presents the available short-term exposure limits provided by OSHA and NIOSH, the approximate duration associated with each short-term limit, and the 8-hour time weighted average permissible exposure limits (PELs).

Table 14 also presents modeled maximum on-site air concentrations associated with maximum fugitive emissions. The maximum 8-hour average and 1-hour average air concentrations were calculated by combining ISCST3 unitized modeling results with maximum modeled chemical-specific emission rates. The air concentrations for averaging times less than 1 hour were calculated by scaling from the modeled maximum on-site 1-hour average concentrations using USEPA screening-level scaling factors that convert concentrations to different averaging times (USEPA 1992). The estimated short-term air concentrations were calculated for durations that corresponded to the short-term exposure limit durations indicated in Table 14. The screening-level scaling factors can only provide very rough approximations of air concentrations because of their inherent uncertainties (e.g., application at close distances from a source).

Table 14 shows that the modeled short-term on-site air concentrations are lower than the corresponding short-term exposure limits, in most cases by several orders of magnitude. This conclusion provides additional support that unacceptable risks to workers associated with chemical exposures from spent carbon unloading activities are not likely to occur.

10c. Acute Short-term Risks – Risk Management Procedures

Comment:
"To the extent that on-site risk management procedures remain in place to mitigate these potential exposures and concomitant risks, and to the extent that these potential exposures are regulated by facility compliance with the Occupational Safety & Health Administration (OSHA) worker protection standards, the risk implications associated with this scenario can be deemed de minimus. This level of analysis should be clearly articulated in this section, and section 4.4.4 of the risk assessment report."

Response:

The facility has in place a protective worker health and safety program which has been developed to meet the requirements of OSHA and a set of comprehensive on-site risk

Table 14

Evaluation of Short-Term Occupational Exposure Limits And Modeled Maximum Ambient Air Concentrations On Site Associated with Fugitive Emissions During Spent Carbon Unloading

Compound	CAS #	Maximum Modeled On-Site Air Concentrations (mg/m3) (a)		Calculated Maximum On-Site Air Concentrations for Short-Term Averaging Times (mg/m3) (scaled from maximum modeled 1-hour average concentration) (f)				8-Hour Average Occupational Exposure Limits (mg/m3) (b)		Short-Term Occupational Exposure Limits (mg/m3) (b)			
										OSHA Exposure Limits		NIOSH Exposure Limits	
		Maximum Modeled 8-Hour Average	Maximum Modeled 1-Hour Average	30-minute (1-hr)*1.1	15-minute (1-hr)*1.3	10-minute (1-hr)*1.4	5-minute (1-hr)*1.6	NIOSH Reference Exposure Limit (8-hr TWA REL)	OSHA Permissible Exposure Limit (8-hr TWA PEL)	Exposure Limit	Duration	Exposure Limit	Duration
1,2-Dibromoethane	106-93-4	1.0E-08	2.4E-08		3E-08		4E-08	0.35	150	230	5-minute	1.0	15-minute
1,3-Butadiene	106-99-0	--	--					4.4 (c)	2.2	10	15-minute		
1,4-Dichlorobenzene	106-46-7	7.0E-03	1.6E-02					60 (c)	450				
Acrylonitrile	107-13-1	3.4E-02	8.0E-02		1E-01			2.2	4.3	20	15-minute	20	15-minute
Arsenic	7440-38-2	7.1E-08	1.7E-07		2E-07			--	0.01			0.002	15-minute
Benzene	71-43-2	3.3E-01	7.7E-01		1E+00			0.32	3.2	20	15-minute	3	15-minute
Beryllium	7440-41-7	9.4E-09	2.2E-08	2E-08			4E-08	--	0.002	0.005	30-minute	0.0005	ceiling
Cadmium	7440-43-9	7.6E-08	1.8E-07		2E-07		3E-07	--	0.005	0.6	ceiling		
Chloroform	67-66-3	2.0E-02	4.8E-02		6E-02		8E-02	49 (c)	--	240	ceiling	9.78	60-minute
Chromium (e)	7440-47-3	2.8E-07	6.6E-07					0.5	0.5				
Chromium VI	18540-29-9	1.6E-07	3.8E-07					0.001 (e)	0.005				
Cobalt	7440-48-4	7.7E-07	1.8E-06					0.05	0.1				
Copper	7440-50-8	8.8E-08	2.1E-07					1	1				
Cyclohexane	110-82-7	9.6E-01	2.2E+00					1050	1050				
Ethylbenzene	100-41-4	5.2E-02	1.2E-01		2E-01			435	435			545	15-minute
Naphthalene	91-20-3	7.6E-05	1.8E-04		2E-04			50	50			75	15-minute
n-Hexane	110-54-3	1.4E-01	3.2E-01					180	1800				
Nickel	7440-02-0	2.7E-07	6.3E-07					0.015	1				
Styrene	100-42-5	1.3E-02	3.1E-02		4E-02		5E-02	215	430	850	5-minute	425	15-minute
Tetrachloroethylene	127-18-4	3.2E-01	7.5E-01				1E+00	170 (c)	680	1360	5-minute		
Toluene	108-88-3	8.8E-02	2.1E-01		3E-01	3E-01		375	750	1130	10-minute	560	15-minute
Trichloroethylene	79-01-6	9.2E-02	2.1E-01				3E-01	134 (d)	540	1070	5-minute		
Vinyl Chloride	75-01-4	5.4E-01	1.3E+00		2E+00			2.6 (c)	2.6	13	15-minute		

TWA = time weighted average.

-- = not available or not calculated.

(a) The maximum modeled on-site 8-hour and 1-hour average air concentrations were based on: 1) the maximum modeled receptor location on site (about 10 meter from H-1); 2) the highest ISCST3-modeled unitized 8-hour average and 1-hour average concentration among all modeled concentrations at the maximum receptor location; and 3) maximum fugitive chemical-specific emission rates calculated based on the maximum spent carbon concentrations unloaded at H-1 for vapor spent carbon. The highest ISCST3-modeled unitized 8-hour and 1-hour average concentrations at the maximum modeled receptor location were 16,426 ug/m3 per 1 g/sec, and 38,302 ug/m3 per 1 g/sec, respectively.

(b) Sources: OSHA PELS - www.osha.gov/pls/oshaweb. NIOSH RELs - www.cdc.gov/niosh/npg. ACGIH TLVs - www.osha.gov/dts/chemicalsampling/toc/toc_chemsamp.html.

(c) The ACGIH TWA-threshold limit value (TLV) was used, if available, if a NIOSH REL was not available.

(d) 10-hour TWA concentration.

(e) NIOSH REL for CrVI is a 10-hr TWA. The listed OSHA PEL for chromium is based on CrIII and CrII. The value for chromium metals and insoluble salts is slightly higher, at 1 mg/m3.

(f) Short-term concentrations were calculated using screening-level scaling factors for durations that corresponded to available short-term occupational exposure limits. Source for screening-level scaling factors: USEPA. 1992. Workbook of Screening Techniques for Assessing Impacts of Toxic Air Pollutants (Revised). EPA-454/R-92-024.

management procedures. A detailed description of on-site risk management procedures and OSHA compliance programs is provided in the RCRA Part B permit application submitted to USEPA in February 2007 (Focus 2007). In addition, the risk assessment Workplan prepared in 2003 presented a summary of workplace practices implemented under OSHA.

In response to this comment, a summary of information related to these topics is provided below, with reference to pertinent sections of the RCRA Part B permit.

The facility's worker health and safety program includes training, medical monitoring, industrial hygiene sampling, hazard communication and use of personal protective equipment, as outlined in Table 15. This program includes an extensive training program to ensure worker safety in areas ranging from use of personal protective equipment to minimize potential chemical exposures, to fall and back protection to minimize the chance of accidental injury or muscle strain. All employees must undergo 40 hours of training related to hazardous waste operations when initially hired, plus an 8-hour refresher course each year. All employees are required to attend regularly scheduled safety meetings and are also required to pass an additional safety test each month. Section H and Appendix XIV of the RCRA Part B permit application provide more details on the facility's personnel training program, including an overall description of the personnel training program and requirements established for handling of hazardous wastes at the facility.

The facility's worker health and safety program includes provision and use of personal protective equipment. All workers involved in spent carbon unloading operations wear respirators in addition to protective clothing. Workers wear company-supplied shirts, pants and steel-toe boots, hard hat, and safety glasses. When handling any spent carbon (whether it is classified as non-hazardous or hazardous), a half-face respirator with organic and dust control cartridges is worn by workers. This practice has been followed since 1992. All employees also receive physicals prior to the start of work and annually thereafter, including the performance of blood testing, EKGs, hearing tests, and pulmonary function tests.

Industrial hygiene (IH) monitoring is conducted each year for a wide variety of organic compounds and dust in air to ensure that adequate personal protective equipment is being used at the facility. The IH monitoring also evaluates noise conditions at the plant. The annual IH surveys monitor workplace breathing zone concentrations of organic compounds and particulate matter among workers employed in a variety of tasks at the facility, for example workers unloading and sampling spent carbon containers, lab technicians and facility assistant managers. As described previously in response to General Comment 2, the IH monitoring includes workers whose potential exposures may be high based on the activities they perform during the workday.

The facility has a variety of safety, emergency and security devices and procedures in place to minimize the possibility of an explosion, fire, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment. These devices and procedures are described in Section F of the RCRA Part B permit application. Section F also describes the security measures and devices that are used to prevent unauthorized site entry and minimize

Table 15
Siemens Water Technologies Corp. Facility Worker Protection Program

1. **Corporate EH&S Manual**

2. **Local Training Programs**
    - 40-Hour Hazwoper Training (new employees)
    - Hazard Communication (Computer)
    - Confined Space (Computer)
    - Lock Out/Tag Out (Computer)
    - Bloodborne Pathogens (Computer)
    - Fire Extinguisher
    - Contingency Plan
    - Personal Protection Equipment (Computer)
    - Back Safety (Computer)
    - Respiratory Protection (Computer)
    - Forklift Training (Computer)
    - Hot Work
    - First Aid (Every Other Year)
    - HM-181 (Computer)
    - Hearing Protection (Computer)
    - Electrical Safety (Computer)
    - Laboratory Safety (Computer)
    - Fall Protection
    - 8-Hour Hazwoper Refresher
    - Hazardous Debris Management
    - Burn Prevention
    - Acid and Caustic Handling

3. **Annual Employee Physicals**
    - General Physical
    - Blood Workup
    - EKG
    - Hearing Test
    - Pulmonary Function Test

4. **Annual Employee IH Monitoring** (organics, dust, noise)

5. **Annual Respirator Fit Test**

6. **Monthly Employee Safety Meetings**

7. **Monthly Safety Committee Meetings**

8. **Company Furnished Items:** Split Lockeroom, Showers, Soap, Towels, Work clothes, Steel-Toed Safety Shoes, Safety Glasses, Gloves, etc.

the possibility of livestock or persons contacting hazardous waste or hazardous waste management units. Additionally, the facility has a comprehensive inspection schedule and inspection procedures to ensure that all facility equipment is in proper operating condition and is being operated properly, as described in Appendix XII in the permit application.

The facility also has a Contingency Plan, presented in Section G and Appendix XIII of the permit application, which is designed to minimize hazards to human health or the environment in the event of a fire, explosion or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents to air, soil or surface water.

11. Evaluation of Reactivation Facility Incremental Impact to CRSSJV Discharge – Section 4.4.3.3, pg. 47

Comment:
"The subsection regarding the "Compil(ation) of chemical concentrations in effluent and select compounds for evaluation" should be expanded to include additional levels of detail. Similar to the manner in which the waste stream was well characterized in preparation of the facility-specific PDT, this section should include general descriptions of the type and magnitude of waste treated while facility effluent data was being compiled. These waste characterization efforts should coincide with the window of time (2005-2006) which serves as the basis for effluent analysis. The subsection should also be expanded to include details regarding effluent monitoring or sampling frequency throughout the period used for analysis."

Response:

The facility performs routine effluent monitoring for a variety of constituents. The facility is required to monitor twice per month for total suspended solids, once per month for chemical oxygen demand (COD) and once per year for a comprehensive priority pollutant test in accordance with its discharge permit issued by the Colorado River Sewage System Joint Venture (CRSSJV) publicly owned treatment works (POTW). The annual comprehensive priority pollutant test samples effluent for more than 20 inorganic compounds, and more than 70 organic compounds, including volatile organics, semi-volatile organics, organochlorine pesticides, and polychlorinated biphenyls (PCBs). The facility's effluent that is discharged to the POTW is also continuously monitored for pH, total dissolved solids, flow, and temperature. The facility also conducts biannual sampling in compliance with USEPA's Centralized Waste Treatment (CWT) categorical pretreatment standards and its analytical results are submitted to both USEPA and CRIT every 6 months. The CWT analysis includes several organic compounds, metals, and oil and grease, in accordance with 40 CFR 437.46(b).

Effluent discharge data from 2005-2006 are provided in Table 4.4-6 in the risk assessment. These data encompass roughly 30 separate sampling events, and include results from several days of sampling conducted during the PDT, biannual sampling conducted in compliance with the CWT categorical pretreatment standards, one sampling event conducted for the facility's annual priority pollutants testing report, and monthly composite metals sampling that was conducted for a limited time for internal Siemens reference. The submitted regulatory monitoring reports for these tests are provided in Attachment F.

In general, since the facility accepts spent carbon that has been used for a variety of different purposes (e.g., treating industrial and municipal wastewater, groundwater, surface water, process materials, or for removing pollutants from vent gases) and at a variety of different locations, the type and magnitude of the spent carbon treated at the facility varies. A detailed description of spent carbon treated during the PDT, and the spiked materials that were added to the feed during the test, is provided in the comprehensive PDT report (Focus 2006). The composition of the spent carbon was considered in establishing the feed for the PDT in order to develop test conditions that were illustrative of the variability of the carbon received by the facility, although to be conservative the feed during the PDT was more heavily loaded with compounds than is typical due to the addition of several spiked materials, and the feed rate was higher than is typical. Sections 3.2 and 3.3 of the PDT report contain information on the spent carbon and spiked material characteristics and constituent feed rates during the PDT. The spent carbon feed rate to the furnace during the PDT averaged 3,049 lbs/hour. During the 2005 priority pollutant testing, the average spent carbon feed rate to the furnace was 2,716 lbs/hour. The average spent carbon feed rate during the biannual CWT tests in 2005 and 2006 ranged from 2,473 lbs/hour to 2,707 lbs/hour. The amount of spent carbon fed to the furnace in 2005 and 2006 averaged 2,680 lbs/hour and 2,686 lbs/hour, respectively. In 2005 and 2006, the annual average total concentration in spent carbon received, calculated based on the sum of all organic and inorganic compound concentrations reported in spent carbon profiles, was approximately 2,100 ppm and 2,800 ppm, respectively. Overall, the 2005-2006 sampling data in Table 4.4-6 (other than the PDT data) are likely to represent a good cross-section of the wide range of spent carbon that is routinely received at the facility.

12. Calculation of incremental facility concentrations resulting from water treatment

Comment:
"The subsection regarding the "Calculat(ion of) incremental facility concentrations resulting from water treatment" should provide additional detail on the relationship between the CRSSJV's removal efficiencies for BOD and suspended solids in treated waters with the removal efficiencies estimated for the range of constituents identified in the SWT effluent."

Response:

In response to USEPA's comment, the following discussion provides additional detail on the relationship between the CRSSJV's removal efficiencies for biological oxygen demand (BOD) and suspended solids in treated waters with the removal efficiencies estimated for the constituents identified in the SWT effluent.

Section 4.4.3.3 in the risk assessment describes the mathematical modeling used to calculate facility-related incremental concentrations in the CRSSJV discharge due to effluent from the carbon reactivation facility that enters the CRSSJV. This methodology took into account the effectiveness of water treatment at the CRSSJV in removing particulates and organics from water prior to discharge. The CRSSJV treatment plant's discharge records for 2005 documented 98% removal of suspended solids and 98% removal of BOD. For purposes of this analysis, suspended solids removal is assumed to correlate directly with particulate removal, and BOD removal is assumed to correlate directly with organics removal. Accordingly, the removal efficiencies for effluent from the facility treated at the CRSSJV were assumed to be 98% for particulates, based on the reported suspended solids removal efficiency, and 98% for organics, based on the facility's reported BOD removal efficiency.

Analysis for chemical material in water and wastewater is classified into two general types of measurements: those that quantify an aggregate amount of chemical matter comprising constituents with a common characteristic and those that quantify individual compounds (APHA/AWWA/WEF 1998). Two aggregate parameters, BOD and total suspended solids (TSS) have traditionally been used to assess the performance and efficacy of waste water treatment plants (Metcalf & Eddy 1991). The common characteristic measured by BOD is the ability of aggressive microorganisms to degrade organic constituents. The common characteristic measured by TSS is the amount of insoluble inorganic constituents.

Operationally, BOD measures the amount of oxygen consumed by heterotrophic microorganisms during the biochemical oxidation of organic matter over a period of 5 days under controlled conditions. Since most organic chemicals (including the priority pollutants) are biodegradable to some extent, BOD can be used as a surrogate for the overall destruction and removal efficiency of individual organics. As an example, we can look at the common priority pollutant toluene. Toluene is 98.6% biotransformed during secondary wastewater treatment (Verschueren 2001). The BOD reduction (as a percentage of the amount that can be rigorously chemically oxidized) corresponding to this treatment is about 86%. Thus the use of BOD is a plausible (albeit conservative) estimate for the destruction and removal of toluene.

Inorganics, particularly metals, in water are partitioned into two broad categories – dissolved and sorbed or chemical incorporated into particulate. Taken together, these categories constitute the aggregate parameter of total solids. Dissolved solids is determined by the residue remaining following evaporation while undissolved particulate is determined by the fraction of materials that is retained on a filter (APHA/AWWA/WEF 1998). The filters normally used to effect this separation have pore sizes between 1.0 and 1.2 μm, thus, only extremely small particulate or colloidal matter can pass (Metcalf & Eddy 1991). The removal of TSS in a wastewater treatment plant is thus a surrogate for the removal of undissolved particulate which is primarily composed of insoluble inorganic matter.

13. Potential fish ingestion risks for the Main Drain – Section 4.4.3.5, pg. 50

This comment includes two items, each of which is addressed below.

13a. Potential fish ingestion risks for the Main Drain – Subsistence Scenario

Comment:

"The risk characterization of this subsistence receptor scenario (fisher), and all subsistence receptor scenarios evaluated, should include the likelihood and magnitude of the entire range of direct and indirect exposures that these receptors incur. EPA's HHRAP guidance is clear, the subsistence fisher exposure scenario assumes that the receptor is exposed to

contaminants emitted from the facility via direct inhalation of vapors and particles, via incidental ingestion of soil, via ingestion of drinking water from surface water sources, via ingestion of homegrown produce, via ingestion of fish, and via ingestion of breast milk. Therefore, please revise and supplement the subsistence receptor risk and hazard estimates with a comprehensive estimate of impact inclusive of the recommended pathways of contaminant exposure."

Response:

In response to this comment, the potential risks due to stack emissions for hypothetical subsistence receptors were expanded to explicitly add in the potential subsistence fish ingestion risks associated with the incremental impact of facility effluent discharged from the CRSSJV.

Table 16 presents the potential fish ingestion risks associated with the incremental impact of facility-effluent on the CRSSJV discharge. These results, which conservatively assume that an adult receptor obtains 100% of the fish they ingest from only the Main Drain over a 30-year period, are well below USEPA's target risk level. The evaluation of the potential incremental impact of facility effluent on the CRSSJV discharge is presented in the risk assessment in Section 4.4.3.5 and Table 4.4-12.

Table 16 also shows the potential risks associated with stack emissions for the receptor with the highest results calculated in the risk assessment (i.e., adult town resident "receptor R_2" who is also assumed to be a subsistence fisher) (see Table 7 in response to Specific Comment 4).

The resulting combined risks shown in Table 16, inclusive of all pathways and reflecting potential impacts from both stack emissions and incremental effluent-related discharge from the CRSSJV, are below USEPA's target risk levels for both cancer and non-cancer health effects. As shown in Table 9, the stack emissions risk assessment results are dominated by one compound, benzidine, which was not detected in the PDT stack gases and which has never been accepted in spent carbon at the facility. When this one compound is removed from the calculations, the risks drop substantially below USEPA's target risk levels. When only detected compounds are included, the risks are reduced even further below target levels.

The likelihood of the subsistence scenario actually occurring is considered to be extremely small, because it incorporates a number of high-end assumptions that each are expected to have a low likelihood of occurrence (e.g., (i) assuming that 100% of a town resident's produce diet for a 30-year period is obtained from homegrown produce, even though the climate limits growing seasons to only selected months of the year, and (ii) assuming that 100% of a person's fish diet over a 30-year period is obtained solely from fish caught in the Main Drain). The potential combined risks for subsistence receptors are considered to reflect high-end scenarios that are highly unlikely to be exceeded.

HHRAP guidance (Chapter 4, Chapter 7 and Appendix C) recommends that infant exposure via breast-milk ingestion be evaluated separately from other exposure scenarios. The

Table 16

Combined Potential Risks for Hypothetical Subsistence Receptors: Stack Emissions and Effluent-Related Discharge from the Joint Venture

Receptor and Group of Evaluated Compounds	**Excess Lifetime Cancer Risk**		**Total Hazard Index**	
	Risk assessment results	**Subsistence scenario**	**Risk assessment results**	**Subsistence scenario**
Incremental Effluent-Related Discharge from POTW: Adult Subsistence Fisher (Main Drain) (a)				
All detected compounds in facility effluent	3E-07		1E-02	
Stack Emissions: Adult Town Resident + Subsistence Fisher (Main Drain) (a, b)				
Group 1 – all detected compounds in stack emissions (95 compounds)	7E-08	1E-07	6E-02	
Group 2 – all compounds in stack emissions except benzidine (177 compounds)	2E-07	3E-07	6E-02	
Group 3 – all compounds in stack emissions (178 compounds) (c)	2E-06	9E-06	6E-02	
Incremental Effluent-Related Discharge from POTW + Stack Emissions: Adult Town Resident + Subsistence Fisher (Main Drain) (a)				
Group 1 – all detected compounds in stack emissions (95 compounds)	4E-07	4E-07	7E-02	
Group 2 – all compounds in stack emissions except benzidine (177 compounds)	5E-07	3E-07	7E-02	
Group 3 – all compounds in stack emissions (178 compounds) (c)	2E-06	9E-06	7E-02	
USEPA Target Risk Levels				
Target risk levels for combustion source risk assessment	1E-05		0.25	

(a) The subsistence fish ingestion pathway assumes 100% of a person's fish diet is provided by fish caught from the Main Drain.

(b) Results are shown for the receptor with the highest calculated potential risks associated with stack emissions (the adult town resident receptor "R_2", who is also assumed to be a subsistence fisher receptor "R_only_fish_drain"). Potential risks for all other evaluated receptors were lower than these values. The town resident receptor is assumed to be exposed via inhalation, soil ingestion, produce ingestion and fish ingestion. The risk assessment assumes that 20% of a person's produce diet is home grown. The subsistence scenario assumes 100% of a persons' produce diet is home grown.

(c) The stack emissions risk results for Group 3 compounds (which includes 83 compounds that were not detected in stack emissions) were dominated by one compound, benzidine, which was not detected stack gases and for which there is no evidence that it has ever been accepted in spent carbon received at the facility.

guidance does not recommend adding infant risks from ingestion of breast-milk to risks calculated for other receptors (adult or child) via other exposure pathways. Rather the guidance recommends calculating cumulative risks for each given receptor. Accordingly, potential risks from breast-milk ingestion by an infant receptor were not added into the combined risks shown in Table 16, which were based on an adult receptor. Rather, as described in Section 4.4.1.3 in the risk assessment, potential risks for a breast-fed infant were calculated using the recommended HHRAP method in which average daily doses of PCDDs/PCDFs from breast-milk ingestion are compared to a background level for a nursing infant. The risk assessment results demonstrated that potential exposure to PCDDs/PCDFs by a nursing infant would be far below background levels.

Potential exposures via drinking water were not evaluated in the risk assessment because drinking water is obtained from groundwater wells for both the CRIT area and for the Town of Parker. Drinking water for CRIT is provided by the CRIT Regional Water System. Drinking water for the Town of Parker is provided by the town water department.

13b. Potential fish ingestion risks for the Main Drain – Exposure Duration

Comment:
"In addition, the details regarding the number of years of contaminant exposure incurred by each subsistence receptor is not clear as presented in table 4.4-12. Please revise the table and narrative in this section by replacing the term "many years", with the precise number of years assumed for determination of both subsistence and chronic-level health impact."

Response:

Footnote (f) in Table 4.4-12 in the risk assessment indicates that the exposure durations used in the fish ingestion exposure calculation were 30 years for an adult and 6 years for a child. These are the recommended default values from HHRAP. The revised narrative in the risk assessment reads as follows (edits in italics): "In the absence of site-specific data, it was conservatively assumed that 100% of the fish eaten by a person every year, *for 30 years by an adult receptor and 6 years by a child receptor,* would be caught only from the Main Drain."

14. Evaluation of subsistence exposure pathways – Section 4.5.9, pg. 61

Comment:
"This assessment of facility-associated health and ecological impact has attempted to comprehensively characterize the range and magnitude of constituents released, and the settings or conditions under which potential exposure may occur. To the extent practicable, site-specific exposure conditions and assumptions were applied to the analysis in an attempt to reduce assessment uncertainty. Many tribal subgroups enjoy unique and culturally significant practices which may effectively serve to increase their exposure to toxic constituents released to the terrestrial environment. The use of sweat lodges and the use of plants and other agricultural products for cultural and/or traditional healing practices illustrate this concept.

This risk assessment report should be expanded to detail all efforts made to evaluate and assess potential impacts resulting from idiosyncratic and culturally-specific tribal practices with the potential to increase contaminant exposure. To the extent these efforts have been made, and the lack of exposure information from culturally-specific tribal practices results in significant datagaps, the influence of those exposure-related datagaps on the overall risk and hazard estimates should be described and characterized as an element of uncertainty."

Response:

The risk assessment aimed to incorporate as much site-specific information as available, including information from CRIT. In 2002, CRIT developed a protocol for obtaining all site-specific information relating to CRIT and tribal members for use in performing the risk assessment. This protocol is presented in Appendix A of the November 2003 Working Draft Risk Assessment Workplan and reprinted here in Attachment G. The protocol was approved as part of the Risk Assessment Workplan and was followed for the risk assessment project, as discussed recently in a phone call with USEPA.[18] Adherence to this protocol is essential for both the integrity of the risk assessment process and for recognition of the unique status and role of CRIT in the permitting process.

The protocol ensures that the RCRA permitting process will provide appropriate respect and deference to Native religious and cultural practices. This has precluded the inclusion of a detailed assessment of these practices in the risk assessment. As with many variables in risk assessment methodology, this adds some uncertainty to the assessment. The potential exposures that were characterized, particularly for subsistence receptors, may provide insight into potential risks from other exposure pathways.

15. Table 4.4-6, 2005-2006 Effluent Discharge Data from Facility

Comment:
"The subject table details the constituents discharged from the facility via the main drain. The primary compounds released via this pathway remain inorganic and metallic constituents. Please develop a supporting narrative for the table which better explains, from a facility-specific constituent fate and transport perspective, why so few organic constituents are subject to release in this aqueous discharge."

Response:

Every organic compound that was detected, even once, in the sampling programs noted in Table 4.4-6 in the risk assessment was evaluated in the risk assessment.[19] As noted above, the facility monitors its effluent for a variety of organic parameters in accordance with its discharge permit and USEPA regulations. The annual comprehensive priority pollutant sampling analyzes the facility effluent for more than 70 organic compounds, including

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[18] Telephone conference call with Patrick Wilson, USEPA Region IX, Monte McCue, Siemens Water Technologies Corp. Plant Manager, and Sarah Foster, CPF Associates, Inc. January 14, 2008.

[19] Organic compounds that were detected only in the PDT effluent testing and were also spiked into the feed materials during the PDT were not selected for evaluation (see Table 4.1-1 in the risk assessment for spiking information).

volatile organics, semi-volatile organics, organochlorine pesticides, and polychlorinated biphenyls (PCBs), in addition to more than 20 inorganic compounds. The biannual CWT sampling analyzes effluent for nine organic compounds, in addition to metals and oil and grease, in accordance with 40 CFR 437.46(b). Sampling conducted as part of the PDT analyzed effluent for over 100 volatile and semi-volatile organic compounds.

The small number of detected organic compounds in facility effluent is a reflection of the facility's carbon regeneration process. Effluent from the facility is discharged from Tank 11 which contains scrubber water blow down, cooling water blow down, boiler blow down, and excess recycle water. Two of these effluent water sources come into contact with compounds associated with spent carbon, the scrubber water that is used to scrub exhaust gases in the facility's air pollution control system, and the recycle water that is used to facilitate transport of spent carbon from the hoppers to the furnace. The presence of organic compounds in scrubber water blow down is limited because these compounds are largely destroyed in the combustion process. The destruction rate of the afterburner is designed to achieve a stringent destruction and removal efficiency (DRE) of 99.99%. The DREs actually achieved in the PDT, which was conducted under challenged operating conditions, were even higher, ranging on average from 99.9941% to 99.997% (see Table 4-1 in the PDT report) (Focus 2006). The transfer of organic compounds that are not destroyed in the afterburner to scrubber water may also be limited by their chemical-physical characteristics (e.g., highly volatile or poorly water soluble compounds will not tend to partition into the aqueous phase). Recycle water accounts for only about 0.1% of the water in Tank 11 and thus the recycle water has a negligible effect on organics in the effluent. The effectiveness of these procedures in limiting organic compounds in the facility effluent is evident in the results compiled for the risk assessment. Out of the more than 100 organic compounds tested for across the multiple sampling programs considered, less than 10 were detected and these were evaluated in the risk assessment.

16. Table 1, Compilation of Chronic Human Health Toxicity Criteria for Compounds not Included in USEPA's 2005 HHRAP

Comment:
"The source of toxicity information (rfd) for the element cobalt appears to be U.S. EPA's Provisional Peer-Reviewed Toxicity Value (PPRTV) database rather than from ATSDR datasource. Please review and confirm the source of all toxicity values to ensure the accuracy of table #1."

Response:

The sources of all toxicity values in Table 1 of Appendix B have been reviewed and confirmed. A check of USEPA's PPRTV database provided by the National Center for Environmental Assessment (NCEA), specifically the "PPRTV Status Table for Registered Users" for the 4th Quarter FY07, showed that cobalt is not on the list of compounds addressed. In the absence of values from USEPA's Integrated Risk Information System (IRIS) or the PPRTV database, toxicity values for cobalt were obtained from one of the other preferred sources recommended in HHRAP. The toxicity values for cobalt were based on minimum risk levels (MRLs) developed by the Agency for Toxic Substances and Disease Registry (ATSDR).

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ATTACHMENTS

ATTACHMENT A

STACK EMISSIONS RISK ASSESSMENT:
ACUTE INHALATION RISK RESULTS
UNDER HYPOTHETICAL UPSET CONDITIONS

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
A_1 max hourly impact point (stack)	
Nitrogen dioxide	3.9E-01
Sulfur dioxide	1.4E-01
Arsenic	4.1E-02
Chlorine	5.6E-03
Lead	4.6E-03
Hydrogen chloride	3.4E-03
Nickel	2.7E-03
Copper	2.2E-03
Cadmium	5.4E-04
Hexachlorobenzene	9.9E-05
Chlorophenyl-phenylether, 4-	8.9E-05
Beryllium	7.8E-05
Chloroform (Trichloromethane)	6.6E-05
Benzidine	6.0E-05
Dibromo-3-chloropropane, 1,2-	5.1E-05
Thallium (I)	4.7E-05
Manganese	3.0E-05
Mercury	2.7E-05
Vanadium	2.7E-05
Hexachlorocyclopentadiene	2.2E-05
Silver	1.9E-05
4,6-Dinitro-2-methylphenol	1.3E-05
Zinc	9.8E-06
Barium	9.1E-06
Mercuric chloride	6.8E-06
Pentachlorophenol	6.1E-06
Aluminum	5.9E-06
Tetrachloroethylene (Perchloroethylene)	5.7E-06
Chromium	5.2E-06
Chromium, hexavalent	5.2E-06
Selenium	4.1E-06
Fluoranthene	3.5E-06
Nitrosodipropylamine, n-	2.9E-06
Antimony	1.7E-06
Bromoform (tribromomethane)	1.7E-06
Chlorobenzene	1.6E-06
Benzoic Acid	1.3E-06
Dinitrotoluene, 2,4-	1.3E-06
Benzene	1.2E-06
Methylene chloride	1.2E-06
3-Penten-2-one, 4-methyl	1.1E-06
Bromodichloromethane	1.1E-06
Ethylhexyl phthalate, bis-2-	1.1E-06
Dinitrotoluene, 2,6-	1.1E-06
Dibromochloromethane	1.0E-06
Methyl bromide (Bromomethane)	8.5E-07
Dinitrophenol, 2,4-	7.2E-07
Nitrophenol, 4-	6.9E-07
Nitroaniline, 3-	6.9E-07
Chloronaphthalene,2-	6.6E-07
Dichlorobenzidine, 3,3'-	5.1E-07
Methylene bromide	5.1E-07
PentaCDF, 2,3,4,7,8-	4.5E-07
Pentachloronitrobenzene (PCNB)	4.2E-07
Toluene	4.2E-07
Cobalt	3.9E-07
Chlorobenzilate	3.2E-07
Dimethylphenol, 2,4-	3.0E-07
Acrylonitrile	3.0E-07
Nitrophenol, 2-	2.6E-07
Heptachlor	2.4E-07
Carbon Tetrachloride	2.4E-07
Carbazole	2.3E-07
Benzaldehyde	2.3E-07
Dinitrobenzene, 1,3-	2.2E-07
Methyl ethyl ketone (2-Butanone)	2.1E-07
Benzyl alcohol	2.1E-07
Phenanthrene	1.6E-07

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Nitroaniline, 4-	1.5E-07
Benzonitrile	1.5E-07
Di-n-butyl phthalate	1.5E-07
Aniline	1.4E-07
Carbon Disulfide	1.4E-07
Methyl chloride (Chloromethane)	1.3E-07
Heptachlor epoxide	1.3E-07
Phenol	1.2E-07
Endrin	9.5E-08
Chlorophenol, 2-	8.5E-08
Chloroaniline, p-	8.3E-08
Trichlorobenzene, 1,2,3-	6.8E-08
Acetone	6.8E-08
Bromophenyl-phenylether, 4-	6.7E-08
Chloro-3-methylphenol, 4-	6.5E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene	6.3E-08
Naphthalene	6.3E-08
Acetophenone	6.3E-08
Cresol, o-	6.2E-08
N-nitrosodimethylamine	5.5E-08
Butylbenzylphthalate	4.4E-08
Chlordane	4.3E-08
Dichlorobenzene, 1,3-	4.2E-08
2,5-Dimethylheptane	4.1E-08
Diethyl phthalate	4.0E-08
Acenaphthylene	4.0E-08
Tetrachloroethane, 1,1,2,2-	3.9E-08
Vinyl Acetate	3.8E-08
Dichloropropene, 1,3- (cis)	3.5E-08
Xylene, p-	3.4E-08
Xylene, m-	3.4E-08
Bis(2-chloroethoxy) methane	3.3E-08
Trichlorophenol, 2,4,5-	3.2E-08
Nitroaniline, 2-	3.1E-08
Nitrobenzene	3.1E-08
Dichlorophenol, 2,4-	2.9E-08
Benzo(b)fluoranthene	2.9E-08
2-Hexanone	2.8E-08
Hexachloroethane (Perchloroethane	2.8E-08
Cresol, p-	2.7E-08
Cresol, m-	2.7E-08
Dimethyl phthalate	2.7E-08
Endosulfan I	2.6E-08
Trichlorophenol, 2,4,6-	2.5E-08
BHC, beta-	2.4E-08
Pyridine	2.2E-08
Dibenzofuran	2.1E-08
Diphenylamine	2.1E-08
Bromobenzene	2.0E-08
Indeno(1,2,3-cd) pyrene	1.9E-08
Tetrachlorobenzene, 1,2,4,5-	1.9E-08
Aldrin	1.9E-08
Nitrosodiphenylamine, N-	1.9E-08
Isophorone	1.9E-08
Pentachlorobenzene	1.8E-08
Di-n-octylphthalate	1.7E-08
Trichlorobenzene, 1,2,4-	1.6E-08
Chrysene	1.5E-08
Aroclor 1254	1.4E-08
Diphenylhydrazine,1,2-	1.4E-08
3-Ethyl benzaldehyde	1.3E-08
4-Ethyl benzaldehyde	1.3E-08
Trichloropropane, 1,2,3-	1.2E-08
DDT, 4-4'-	1.2E-08
Butylbenzene, sec	1.2E-08
Xylene, o-	1.2E-08
1,1-Dichloropropene	1.0E-08
Trichloroethane, 1,1,2-	9.5E-09
Dieldrin	9.2E-09
BHC, alpha-	9.0E-09
Benzo(a)Anthracene	8.7E-09

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Styrene	8.1E-09
Bis(2-chlorethyl)ether	8.1E-09
Benzo(k)fluoranthene	7.8E-09
2,2'-oxybis (1-Chloropropane)	7.7E-09
Iodomethane	7.2E-09
Methyl isobutyl ketone	5.6E-09
Benzo(a)pyrene	5.0E-09
gamma-BHC (Lindane)	4.6E-09
TetraCDD, 2,3,7,8-	4.3E-09
Ethylene dibromide	3.9E-09
TetraCDF, 2,3,7,8-	3.9E-09
Trichloroethylene	3.6E-09
Tetrahydrofuran	3.6E-09
Pyrene	3.5E-09
DDD, 4,4'-	3.5E-09
Tetrachloroethane, 1,1,1,2-	3.1E-09
1,3-Dichloropropane	3.0E-09
Butylbenzene, n-	2.9E-09
Dichloroethylene 1,1-	2.8E-09
2,2-Dichloropropane	2.8E-09
Butylbenzene, tert	2.7E-09
Vinyl Chloride	2.5E-09
Trichloroethane, 1,1,1-	2.4E-09
PentaCDD, 1,2,3,7,8-	2.3E-09
Anthracene	2.3E-09
Acenaphthene	2.2E-09
2-Methylnaphthalene	2.1E-09
Trimethylbenzene, 1,3,5-	1.9E-09
Dichlorobenzene, 1,2-	1.7E-09
Dichloroethane, 1,2- (Ethylene Dichloride)	1.6E-09
HexaCDF, 1,2,3,6,7,8-	1.5E-09
HexaCDF, 2,3,4,6,7,8-	1.2E-09
Methoxychlor	1.1E-09
Dichlorobenzene,1,4-	1.0E-09
DDE, 4,4'-	9.8E-10
HexaCDF, 1,2,3,4,7,8-	9.8E-10
Fluorene	8.6E-10
Cumene (Isopropylbenzene)	8.5E-10
2-Chlorotoluene	7.5E-10
4-Chlorotoluene	7.5E-10
Ethylene Glycol	6.5E-10
Propylbenzene, n-	6.2E-10
Trichlorofluoromethane (Freon 11)	5.4E-10
1,2,4-Trimethylbenzene	5.4E-10
Dichloroethylene, cis-1,2-	4.8E-10
Ethylbenzene	4.7E-10
Dichloropropane, 1,2-	4.7E-10
PentaCDF, 1,2,3,7,8-	4.0E-10
HexaCDD, 1,2,3,4,7,8-	3.1E-10
Chloroethane	3.1E-10
Dichlorodifluoromethane	3.1E-10
Bromochloromethane	3.0E-10
Benzo(g,h,i)perylene	3.0E-10
methyl tert-butyl ether	2.4E-10
Propylene oxide	1.7E-10
Dichloroethylene-1,2 (trans)	1.5E-10
Dichloroethane 1,1-	1.5E-10
Methyl methacrylate	4.1E-11
HexaCDD, 1,2,3,7,8,9-	3.8E-11
HexaCDD, 1,2,3,6,7,8-	2.3E-11
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	2.0E-11
Dibenz(a,h)anthracene	1.9E-11
Dioxane, 1,4-	1.5E-11
HeptaCDF, 1,2,3,4,6,7,8-	3.8E-12
HexaCDF, 1,2,3,7,8,9-	2.0E-12
Acrylic Acid	1.6E-12
OctaCDF, 1,2,3,4,6,7,8,9-	1.1E-12
1-Hexane (n-hexane)	2.8E-13
HeptaCDF, 1,2,3,4,7,8,9-	2.5E-13
OctaCDD, 1,2,3,4,6,7,8,9-	2.3E-13
HeptaCDD, 1,2,3,4,6,7,8-	1.8E-13

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide)	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone)	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC
Total (b)	5.9E-01
A_2 closest business	
Nitrogen dioxide	3.9E-01
Sulfur dioxide	1.4E-01
Arsenic	1.6E-02
Chlorine	5.6E-03
Hydrogen chloride	3.4E-03
Lead	1.9E-03
Nickel	1.1E-03
Copper	9.0E-04
Cadmium	2.2E-04
Hexachlorobenzene	9.9E-05
Chlorophenyl-phenylether, 4-	9.0E-05
Chloroform (Trichloromethane)	6.7E-05
Benzidine	5.8E-05
Dibromo-3-chloropropane, 1,2-	5.2E-05
Beryllium	3.1E-05
Mercury	2.8E-05
Hexachlorocyclopentadiene	2.2E-05
Thallium (I)	1.9E-05
4,6-Dinitro-2-methylphenol	1.3E-05
Manganese	1.2E-05
Vanadium	1.1E-05
Silver	7.7E-06
Mercuric chloride	6.8E-06
Pentachlorophenol	6.1E-06
Tetrachloroethylene (Perchloroethylene)	5.7E-06
Zinc	3.9E-06
Barium	3.7E-06
Fluoranthene	3.5E-06
Nitrosodipropylamine, n-	2.9E-06
Aluminum	2.4E-06
Chromium	2.1E-06
Chromium, hexavalent	2.1E-06
Antimony	1.7E-06
Bromoform (tribromomethane)	1.7E-06
Selenium	1.6E-06
Chlorobenzene	1.6E-06
Benzoic Acid	1.3E-06
Dinitrotoluene, 2,4-	1.3E-06
Benzene	1.2E-06
Methylene chloride	1.2E-06
3-Penten-2-one, 4-methyl	1.1E-06
Bromodichloromethane	1.1E-06
Ethylhexyl phthalate, bis-2-	1.1E-06
Dinitrotoluene, 2,6-	1.1E-06
Dibromochloromethane	1.0E-06
Methyl bromide (Bromomethane)	8.6E-07
Dinitrophenol, 2,4-	7.3E-07
Nitrophenol, 4-	7.0E-07
Nitroaniline, 3-	7.0E-07
Chloronaphthalene,2-	6.6E-07

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Methylene bromide	5.1E-07
Dichlorobenzidine, 3,3'-	5.1E-07
PentaCDF, 2,3,4,7,8-	4.4E-07
Pentachloronitrobenzene (PCNB)	4.2E-07
Toluene	4.2E-07
Chlorobenzilate	3.2E-07
Dimethylphenol, 2,4-	3.1E-07
Acrylonitrile	3.0E-07
Nitrophenol, 2-	2.6E-07
Heptachlor	2.4E-07
Carbon Tetrachloride	2.4E-07
Carbazole	2.3E-07
Benzaldehyde	2.3E-07
Dinitrobenzene, 1,3-	2.2E-07
Methyl ethyl ketone (2-Butanone)	2.1E-07
Benzyl alcohol	2.1E-07
Phenanthrene	1.6E-07
Cobalt	1.6E-07
Nitroaniline, 4-	1.5E-07
Benzonitrile	1.5E-07
Di-n-butyl phthalate	1.5E-07
Aniline	1.4E-07
Carbon Disulfide	1.4E-07
Methyl chloride (Chloromethane)	1.3E-07
Heptachlor epoxide	1.3E-07
Phenol	1.2E-07
Endrin	9.5E-08
Chlorophenol, 2-	8.6E-08
Chloroaniline, p-	8.3E-08
Trichlorobenzene, 1,2,3-	6.9E-08
Acetone	6.8E-08
Bromophenyl-phenylether, 4-	6.7E-08
Chloro-3-methylphenol, 4-	6.6E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene	6.4E-08
Naphthalene	6.4E-08
Acetophenone	6.3E-08
Cresol, o-	6.2E-08
N-nitrosodimethylamine	5.5E-08
Butylbenzylphthalate	4.4E-08
Chlordane	4.3E-08
Dichlorobenzene, 1,3-	4.2E-08
2,5-Dimethylheptane	4.1E-08
Diethyl phthalate	4.0E-08
Acenaphthylene	4.0E-08
Tetrachloroethane, 1,1,2,2-	3.9E-08
Vinyl Acetate	3.9E-08
Dichloropropene, 1,3- (cis)	3.5E-08
Xylene, p-	3.4E-08
Xylene, m-	3.4E-08
Bis(2-chloroethoxy) methane	3.3E-08
Trichlorophenol, 2,4,5-	3.2E-08
Nitroaniline, 2-	3.2E-08
Nitrobenzene	3.1E-08
Dichlorophenol, 2,4-	2.9E-08
Benzo(b)fluoranthene	2.9E-08
2-Hexanone	2.8E-08
Hexachloroethane (Perchloroethane	2.8E-08
Cresol, p-	2.7E-08
Cresol, m-	2.7E-08
Dimethyl phthalate	2.7E-08
Endosulfan I	2.6E-08
Trichlorophenol, 2,4,6-	2.6E-08
BHC, beta-	2.4E-08
Pyridine	2.2E-08
Dibenzofuran	2.1E-08
Diphenylamine	2.1E-08
Bromobenzene	2.0E-08
Tetrachlorobenzene, 1,2,4,5-	1.9E-08
Aldrin	1.9E-08
Nitrosodiphenylamine, N-	1.9E-08
Isophorone	1.9E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Pentachlorobenzene	1.8E-08
Di-n-octylphthalate	1.7E-08
Trichlorobenzene, 1,2,4-	1.6E-08
Chrysene	1.5E-08
Aroclor 1254	1.5E-08
Diphenylhydrazine,1,2-	1.4E-08
3-Ethyl benzaldehyde	1.4E-08
4-Ethyl benzaldehyde	1.4E-08
Trichloropropane, 1,2,3-	1.2E-08
DDT, 4-4'-	1.2E-08
Butylbenzene, sec	1.2E-08
Xylene, o-	1.2E-08
1,1-Dichloropropene	1.0E-08
Trichloroethane, 1,1,2-	9.6E-09
Dieldrin	9.2E-09
BHC, alpha-	9.0E-09
Benzo(a)Anthracene	8.6E-09
Styrene	8.2E-09
Bis(2-chlorethyl)ether	8.1E-09
2,2'-oxybis (1-Chloropropane)	7.7E-09
Indeno(1,2,3-cd) pyrene	7.7E-09
Benzo(k)fluoranthene	7.6E-09
Iodomethane	7.2E-09
Methyl isobutyl ketone	5.6E-09
Benzo(a)pyrene	4.9E-09
gamma-BHC (Lindane)	4.6E-09
TetraCDD, 2,3,7,8-	4.3E-09
Ethylene dibromide	3.9E-09
TetraCDF, 2,3,7,8-	3.9E-09
Trichloroethylene	3.6E-09
Tetrahydrofuran	3.6E-09
Pyrene	3.6E-09
DDD, 4,4'-	3.5E-09
Tetrachloroethane, 1,1,1,2-	3.2E-09
1,3-Dichloropropane	3.0E-09
Butylbenzene, n-	2.9E-09
Dichloroethylene 1,1-	2.8E-09
2,2-Dichloropropane	2.8E-09
Butylbenzene, tert	2.8E-09
Vinyl Chloride	2.6E-09
Trichloroethane, 1,1,1-	2.4E-09
PentaCDD, 1,2,3,7,8-	2.3E-09
Anthracene	2.3E-09
Acenaphthene	2.2E-09
2-Methylnaphthalene	2.1E-09
Trimethylbenzene, 1,3,5-	1.9E-09
Dichlorobenzene, 1,2-	1.7E-09
Dichloroethane, 1,2- (Ethylene Dichloride)	1.6E-09
HexaCDF, 1,2,3,6,7,8-	1.4E-09
HexaCDF, 2,3,4,6,7,8-	1.1E-09
Methoxychlor	1.1E-09
Dichlorobenzene,1,4-	1.0E-09
DDE, 4,4'-	9.8E-10
HexaCDF, 1,2,3,4,7,8-	9.5E-10
Fluorene	8.7E-10
Cumene (Isopropylbenzene)	8.5E-10
2-Chlorotoluene	7.5E-10
4-Chlorotoluene	7.5E-10
Ethylene Glycol	6.5E-10
Propylbenzene, n-	6.2E-10
Trichlorofluoromethane (Freon 11)	5.5E-10
1,2,4-Trimethylbenzene	5.4E-10
Dichloroethylene, cis-1,2-	4.9E-10
Ethylbenzene	4.7E-10
Dichloropropane, 1,2-	4.7E-10
PentaCDF, 1,2,3,7,8-	4.0E-10
Chloroethane	3.1E-10
Dichlorodifluoromethane	3.1E-10
HexaCDD, 1,2,3,4,7,8-	3.1E-10
Bromochloromethane	3.0E-10
Benzo(g,h,i)perylene	2.9E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
methyl tert-butyl ether	2.4E-10
Propylene oxide	1.7E-10
Dichloroethylene-1,2 (trans)	1.5E-10
Dichloroethane 1,1-	1.5E-10
Methyl methacrylate	4.1E-11
HexaCDD, 1,2,3,7,8,9-	3.7E-11
HexaCDD, 1,2,3,6,7,8-	2.2E-11
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	2.0E-11
Dioxane, 1,4-	1.6E-11
Dibenz(a,h)anthracene	8.0E-12
HeptaCDF, 1,2,3,4,6,7,8-	3.7E-12
HexaCDF, 1,2,3,7,8,9-	2.0E-12
Acrylic Acid	1.6E-12
OctaCDF, 1,2,3,4,6,7,8,9-	1.1E-12
1-Hexane (n-hexane)	2.8E-13
HeptaCDF, 1,2,3,4,7,8,9-	2.5E-13
OctaCDD, 1,2,3,4,6,7,8,9-	2.3E-13
HeptaCDD, 1,2,3,4,6,7,8-	1.8E-13
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide)	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone)	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC
Total (b)	5.6E-01
R_1 resident	
Nitrogen dioxide	1.6E-01
Sulfur dioxide	5.8E-02
Arsenic	5.8E-03
Chlorine	2.3E-03
Hydrogen chloride	1.4E-03
Lead	6.6E-04
Nickel	3.8E-04
Copper	3.2E-04
Cadmium	7.8E-05
Hexachlorobenzene	4.0E-05
Chlorophenyl-phenylether, 4-	3.7E-05
Chloroform (Trichloromethane)	2.7E-05
Benzidine	2.6E-05
Dibromo-3-chloropropane, 1,2-	2.1E-05
Mercury	1.1E-05
Beryllium	1.1E-05
Hexachlorocyclopentadiene	9.1E-06
Thallium (I)	6.7E-06
4,6-Dinitro-2-methylphenol	5.3E-06
Manganese	4.2E-06
Vanadium	3.8E-06
Mercuric chloride	2.8E-06
Silver	2.7E-06
Pentachlorophenol	2.5E-06
Tetrachloroethylene (Perchloroethylene	2.3E-06
Fluoranthene	1.4E-06
Zinc	1.4E-06
Barium	1.3E-06
Nitrosodipropylamine, n-	1.2E-06
Aluminum	8.4E-07
Chromium	7.4E-07
Chromium, hexavalent	7.4E-07

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Antimony	7.0E-07
Bromoform (tribromomethane)	6.8E-07
Chlorobenzene	6.4E-07
Selenium	5.8E-07
Benzoic Acid	5.4E-07
Dinitrotoluene, 2,4-	5.4E-07
Benzene	4.9E-07
Methylene chloride	4.7E-07
Ethylhexyl phthalate, bis-2-	4.7E-07
3-Penten-2-one, 4-methyl	4.6E-07
Bromodichloromethane	4.5E-07
Dinitrotoluene, 2,6-	4.3E-07
Dibromochloromethane	4.2E-07
Methyl bromide (Bromomethane)	3.5E-07
Dinitrophenol, 2,4-	3.0E-07
Nitrophenol, 4-	2.8E-07
Nitroaniline, 3-	2.8E-07
Chloronaphthalene,2-	2.7E-07
Dichlorobenzidine, 3,3'-	2.2E-07
Methylene bromide	2.1E-07
PentaCDF, 2,3,4,7,8-	1.9E-07
Pentachloronitrobenzene (PCNB)	1.7E-07
Toluene	1.7E-07
Chlorobenzilate	1.3E-07
Dimethylphenol, 2,4-	1.2E-07
Acrylonitrile	1.2E-07
Nitrophenol, 2-	1.1E-07
Heptachlor	9.7E-08
Carbon Tetrachloride	9.7E-08
Carbazole	9.5E-08
Benzaldehyde	9.4E-08
Dinitrobenzene, 1,3-	8.9E-08
Methyl ethyl ketone (2-Butanone)	8.4E-08
Benzyl alcohol	8.4E-08
Phenanthrene	6.7E-08
Nitroaniline, 4-	6.1E-08
Benzonitrile	6.1E-08
Di-n-butyl phthalate	6.0E-08
Aniline	5.8E-08
Carbon Disulfide	5.6E-08
Cobalt	5.5E-08
Methyl chloride (Chloromethane)	5.2E-08
Heptachlor epoxide	5.2E-08
Phenol	4.8E-08
Endrin	3.9E-08
Chlorophenol, 2-	3.5E-08
Chloroaniline, p-	3.4E-08
Trichlorobenzene, 1,2,3-	2.8E-08
Acetone	2.8E-08
Bromophenyl-phenylether, 4-	2.7E-08
Chloro-3-methylphenol, 4-	2.7E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene	2.6E-08
Naphthalene	2.6E-08
Acetophenone	2.6E-08
Cresol, o-	2.5E-08
N-nitrosodimethylamine	2.3E-08
Butylbenzylphthalate	1.8E-08
Chlordane	1.7E-08
Dichlorobenzene, 1,3-	1.7E-08
2,5-Dimethylheptane	1.7E-08
Diethyl phthalate	1.6E-08
Acenaphthylene	1.6E-08
Tetrachloroethane, 1,1,2,2-	1.6E-08
Vinyl Acetate	1.6E-08
Dichloropropene, 1,3- (cis)	1.4E-08
Xylene, p-	1.4E-08
Xylene, m-	1.4E-08
Bis(2-chloroethoxy) methane	1.4E-08
Trichlorophenol, 2,4,5-	1.3E-08
Nitroaniline, 2-	1.3E-08
Nitrobenzene	1.3E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Dichlorophenol, 2,4-	1.2E-08
Benzo(b)fluoranthene	1.2E-08
2-Hexanone	1.1E-08
Hexachloroethane (Perchloroethane	1.1E-08
Cresol, p-	1.1E-08
Cresol, m-	1.1E-08
Dimethyl phthalate	1.1E-08
Endosulfan I	1.1E-08
Trichlorophenol, 2,4,6-	1.0E-08
BHC, beta-	9.6E-09
Pyridine	9.2E-09
Dibenzofuran	8.7E-09
Diphenylamine	8.7E-09
Bromobenzene	8.1E-09
Aldrin	7.9E-09
Tetrachlorobenzene, 1,2,4,5-	7.9E-09
Nitrosodiphenylamine, N-	7.8E-09
Isophorone	7.8E-09
Pentachlorobenzene	7.3E-09
Di-n-octylphthalate	7.1E-09
Trichlorobenzene, 1,2,4-	6.5E-09
Chrysene	6.3E-09
Aroclor 1254	5.9E-09
Diphenylhydrazine,1,2-	5.7E-09
3-Ethyl benzaldehyde	5.5E-09
4-Ethyl benzaldehyde	5.5E-09
Trichloropropane, 1,2,3-	5.0E-09
DDT, 4-4'-	4.9E-09
Butylbenzene, sec	4.8E-09
Xylene, o-	4.7E-09
1,1-Dichloropropene	4.2E-09
Trichloroethane, 1,1,2-	3.9E-09
Dieldrin	3.8E-09
BHC, alpha-	3.7E-09
Benzo(a)Anthracene	3.7E-09
Styrene	3.3E-09
Benzo(k)fluoranthene	3.3E-09
Bis(2-chlorethyl)ether	3.3E-09
2,2'-oxybis (1-Chloropropane)	3.2E-09
Iodomethane	3.0E-09
Indeno(1,2,3-cd) pyrene	2.7E-09
Methyl isobutyl ketone	2.3E-09
Benzo(a)pyrene	2.1E-09
gamma-BHC (Lindane)	1.9E-09
TetraCDD, 2,3,7,8-	1.8E-09
TetraCDF, 2,3,7,8-	1.6E-09
Ethylene dibromide	1.6E-09
Trichloroethylene	1.5E-09
Tetrahydrofuran	1.5E-09
Pyrene	1.5E-09
DDD, 4,4'-	1.4E-09
Tetrachloroethane, 1,1,1,2-	1.3E-09
1,3-Dichloropropane	1.2E-09
Butylbenzene, n-	1.2E-09
Dichloroethylene 1,1-	1.1E-09
2,2-Dichloropropane	1.1E-09
Butylbenzene, tert	1.1E-09
Vinyl Chloride	1.0E-09
PentaCDD, 1,2,3,7,8-	1.0E-09
Trichloroethane, 1,1,1-	9.9E-10
Anthracene	9.3E-10
Acenaphthene	9.0E-10
2-Methylnaphthalene	8.7E-10
Trimethylbenzene, 1,3,5-	7.9E-10
Dichlorobenzene, 1,2-	6.9E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	6.5E-10
HexaCDF, 1,2,3,6,7,8-	6.4E-10
HexaCDF, 2,3,4,6,7,8-	5.1E-10
Methoxychlor	4.4E-10
HexaCDF, 1,2,3,4,7,8-	4.2E-10
Dichlorobenzene,1,4-	4.1E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
DDE, 4,4'-	4.0E-10
Fluorene	3.5E-10
Cumene (Isopropylbenzene)	3.5E-10
2-Chlorotoluene	3.1E-10
4-Chlorotoluene	3.1E-10
Ethylene Glycol	2.7E-10
Propylbenzene, n-	2.5E-10
Trichlorofluoromethane (Freon 11)	2.2E-10
1,2,4-Trimethylbenzene	2.2E-10
Dichloroethylene, cis-1,2-	2.0E-10
Ethylbenzene	1.9E-10
Dichloropropane, 1,2-	1.9E-10
PentaCDF, 1,2,3,7,8-	1.7E-10
HexaCDD, 1,2,3,4,7,8-	1.4E-10
Benzo(g,h,i)perylene	1.3E-10
Chloroethane	1.3E-10
Dichlorodifluoromethane	1.3E-10
Bromochloromethane	1.2E-10
methyl tert-butyl ether	9.7E-11
Propylene oxide	6.9E-11
Dichloroethylene-1,2 (trans)	6.3E-11
Dichloroethane 1,1-	6.0E-11
Methyl methacrylate	1.7E-11
HexaCDD, 1,2,3,7,8,9-	1.6E-11
HexaCDD, 1,2,3,6,7,8-	9.8E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	8.1E-12
Dioxane, 1,4-	6.3E-12
Dibenz(a,h)anthracene	2.9E-12
HeptaCDF, 1,2,3,4,6,7,8-	1.6E-12
HexaCDF, 1,2,3,7,8,9-	8.6E-13
Acrylic Acid	6.4E-13
OctaCDF, 1,2,3,4,6,7,8,9-	4.7E-13
1-Hexane (n-hexane)	1.1E-13
HeptaCDF, 1,2,3,4,7,8,9-	1.1E-13
OctaCDD, 1,2,3,4,6,7,8,9-	1.0E-13
HeptaCDD, 1,2,3,4,6,7,8-	7.9E-14
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide)	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone)	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC
Total (b)	2.3E-01
R_2 resident	
Nitrogen dioxide	1.1E-01
Sulfur dioxide	3.9E-02
Arsenic	3.4E-03
Chlorine	1.5E-03
Hydrogen chloride	9.2E-04
Lead	3.9E-04
Nickel	2.3E-04
Copper	1.9E-04
Cadmium	4.6E-05
Hexachlorobenzene	2.7E-05
Chlorophenyl-phenylether, 4-	2.5E-05
Chloroform (Trichloromethane)	1.8E-05
Benzidine	1.7E-05
Dibromo-3-chloropropane, 1,2-	1.4E-05

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Mercury	7.5E-06
Beryllium	6.6E-06
Hexachlorocyclopentadiene	6.1E-06
Thallium (I)	4.0E-06
4,6-Dinitro-2-methylphenol	3.5E-06
Manganese	2.5E-06
Vanadium	2.3E-06
Mercuric chloride	1.9E-06
Pentachlorophenol	1.7E-06
Silver	1.6E-06
Tetrachloroethylene (Perchloroethylene	1.6E-06
Fluoranthene	9.5E-07
Zinc	8.3E-07
Nitrosodipropylamine, n-	7.8E-07
Barium	7.7E-07
Aluminum	5.0E-07
Antimony	4.7E-07
Bromoform (tribromomethane	4.6E-07
Chromium	4.4E-07
Chromium, hexavalent	4.4E-07
Chlorobenzene	4.3E-07
Benzoic Acid	3.6E-07
Dinitrotoluene, 2,4-	3.6E-07
Selenium	3.5E-07
Benzene	3.3E-07
Ethylhexyl phthalate, bis-2-	3.2E-07
Methylene chloride	3.2E-07
3-Penten-2-one, 4-methyl	3.1E-07
Bromodichloromethane	3.0E-07
Dinitrotoluene, 2,6-	2.9E-07
Dibromochloromethane	2.8E-07
Methyl bromide (Bromomethane	2.3E-07
Dinitrophenol, 2,4-	2.0E-07
Nitrophenol, 4-	1.9E-07
Nitroaniline, 3-	1.9E-07
Chloronaphthalene,2-	1.8E-07
Dichlorobenzidine, 3,3'-	1.5E-07
Methylene bromide	1.4E-07
PentaCDF, 2,3,4,7,8-	1.3E-07
Pentachloronitrobenzene (PCNB	1.1E-07
Toluene	1.1E-07
Chlorobenzilate	9.0E-08
Dimethylphenol, 2,4-	8.3E-08
Acrylonitrile	8.1E-08
Nitrophenol, 2-	7.2E-08
Heptachlor	6.5E-08
Carbon Tetrachloride	6.5E-08
Carbazole	6.4E-08
Benzaldehyde	6.3E-08
Dinitrobenzene, 1,3-	6.0E-08
Methyl ethyl ketone (2-Butanone	5.6E-08
Benzyl alcohol	5.6E-08
Phenanthrene	4.5E-08
Nitroaniline, 4-	4.1E-08
Benzonitrile	4.1E-08
Di-n-butyl phthalate	4.0E-08
Aniline	3.9E-08
Carbon Disulfide	3.7E-08
Methyl chloride (Chloromethane	3.5E-08
Heptachlor epoxide	3.5E-08
Cobalt	3.3E-08
Phenol	3.2E-08
Endrin	2.6E-08
Chlorophenol, 2-	2.3E-08
Chloroaniline, p-	2.3E-08
Trichlorobenzene, 1,2,3-	1.9E-08
Acetone	1.9E-08
Bromophenyl-phenylether, 4-	1.8E-08
Chloro-3-methylphenol, 4-	1.8E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene	1.7E-08
Naphthalene	1.7E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Acetophenone	1.7E-08
Cresol, o-	1.7E-08
N-nitrosodimethylamine	1.5E-08
Butylbenzylphthalate	1.2E-08
Chlordane	1.2E-08
Dichlorobenzene, 1,3-	1.2E-08
2,5-Dimethylheptane	1.1E-08
Diethyl phthalate	1.1E-08
Acenaphthylene	1.1E-08
Tetrachloroethane, 1,1,2,2-	1.1E-08
Vinyl Acetate	1.1E-08
Dichloropropene, 1,3- (cis)	9.6E-09
Xylene, p-	9.3E-09
Xylene, m-	9.3E-09
Bis(2-chloroethoxy) methane	9.1E-09
Trichlorophenol, 2,4,5-	8.8E-09
Nitroaniline, 2-	8.6E-09
Nitrobenzene	8.6E-09
Dichlorophenol, 2,4-	8.0E-09
Benzo(b)fluoranthene	7.8E-09
2-Hexanone	7.6E-09
Hexachloroethane (Perchloroethane	7.6E-09
Cresol, p-	7.4E-09
Cresol, m-	7.4E-09
Dimethyl phthalate	7.3E-09
Endosulfan I	7.0E-09
Trichlorophenol, 2,4,6-	7.0E-09
BHC, beta-	6.5E-09
Pyridine	6.1E-09
Dibenzofuran	5.8E-09
Diphenylamine	5.8E-09
Bromobenzene	5.4E-09
Aldrin	5.3E-09
Tetrachlorobenzene, 1,2,4,5-	5.3E-09
Nitrosodiphenylamine, N-	5.2E-09
Isophorone	5.2E-09
Pentachlorobenzene	4.9E-09
Di-n-octylphthalate	4.8E-09
Trichlorobenzene, 1,2,4-	4.3E-09
Chrysene	4.3E-09
Aroclor 1254	4.0E-09
Diphenylhydrazine,1,2-	3.8E-09
3-Ethyl benzaldehyde	3.7E-09
4-Ethyl benzaldehyde	3.7E-09
Trichloropropane, 1,2,3-	3.4E-09
DDT, 4-4'-	3.3E-09
Butylbenzene, sec	3.2E-09
Xylene, o-	3.2E-09
1,1-Dichloropropene	2.8E-09
Trichloroethane, 1,1,2-	2.6E-09
Dieldrin	2.5E-09
Benzo(a)Anthracene	2.5E-09
BHC, alpha-	2.5E-09
Benzo(k)fluoranthene	2.2E-09
Styrene	2.2E-09
Bis(2-chlorethyl)ether	2.2E-09
2,2'-oxybis (1-Chloropropane)	2.1E-09
Iodomethane	2.0E-09
Indeno(1,2,3-cd) pyrene	1.6E-09
Methyl isobutyl ketone	1.5E-09
Benzo(a)pyrene	1.4E-09
gamma-BHC (Lindane)	1.3E-09
TetraCDD, 2,3,7,8-	1.2E-09
TetraCDF, 2,3,7,8-	1.1E-09
Ethylene dibromide	1.1E-09
Trichloroethylene	9.9E-10
Tetrahydrofuran	9.9E-10
Pyrene	9.7E-10
DDD, 4,4'-	9.7E-10
Tetrachloroethane, 1,1,1,2-	8.6E-10
1,3-Dichloropropane	8.2E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Butylbenzene, n-	7.9E-10
Dichloroethylene 1,1-	7.6E-10
2,2-Dichloropropane	7.6E-10
Butylbenzene, tert	7.5E-10
Vinyl Chloride	7.0E-10
PentaCDD, 1,2,3,7,8-	6.8E-10
Trichloroethane, 1,1,1-	6.6E-10
Anthracene	6.2E-10
Acenaphthene	6.0E-10
2-Methylnaphthalene	5.8E-10
Trimethylbenzene, 1,3,5-	5.3E-10
Dichlorobenzene, 1,2-	4.6E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	4.3E-10
HexaCDF, 1,2,3,6,7,8-	4.3E-10
HexaCDF, 2,3,4,6,7,8-	3.4E-10
Methoxychlor	3.0E-10
HexaCDF, 1,2,3,4,7,8-	2.8E-10
Dichlorobenzene,1,4-	2.8E-10
DDE, 4,4'-	2.7E-10
Fluorene	2.4E-10
Cumene (Isopropylbenzene)	2.3E-10
2-Chlorotoluene	2.1E-10
4-Chlorotoluene	2.0E-10
Ethylene Glycol	1.8E-10
Propylbenzene, n-	1.7E-10
Trichlorofluoromethane (Freon 11)	1.5E-10
1,2,4-Trimethylbenzene	1.5E-10
Dichloroethylene, cis-1,2-	1.3E-10
Ethylbenzene	1.3E-10
Dichloropropane, 1,2-	1.3E-10
PentaCDF, 1,2,3,7,8-	1.2E-10
HexaCDD, 1,2,3,4,7,8-	9.2E-11
Benzo(g,h,i)perylene	8.8E-11
Chloroethane	8.6E-11
Dichlorodifluoromethane	8.4E-11
Bromochloromethane	8.3E-11
methyl tert-butyl ether	6.5E-11
Propylene oxide	4.6E-11
Dichloroethylene-1,2 (trans)	4.2E-11
Dichloroethane 1,1-	4.0E-11
Methyl methacrylate	1.1E-11
HexaCDD, 1,2,3,7,8,9-	1.1E-11
HexaCDD, 1,2,3,6,7,8-	6.7E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	5.4E-12
Dioxane, 1,4-	4.2E-12
Dibenz(a,h)anthracene	1.7E-12
HeptaCDF, 1,2,3,4,6,7,8-	1.1E-12
HexaCDF, 1,2,3,7,8,9-	5.8E-13
Acrylic Acid	4.3E-13
OctaCDF, 1,2,3,4,6,7,8,9-	3.2E-13
1-Hexane (n-hexane)	7.6E-14
HeptaCDF, 1,2,3,4,7,8,9-	7.3E-14
OctaCDD, 1,2,3,4,6,7,8,9-	6.8E-14
HeptaCDD, 1,2,3,4,6,7,8-	5.3E-14
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide)	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone)	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Total (b)	1.5E-01
R_3 resident farmer	
Nitrogen dioxide	1.0E-01
Sulfur dioxide	3.6E-02
Arsenic	3.3E-03
Chlorine	1.4E-03
Hydrogen chloride	8.7E-04
Lead	3.7E-04
Nickel	2.1E-04
Copper	1.8E-04
Cadmium	4.4E-05
Hexachlorobenzene	2.6E-05
Chlorophenyl-phenylether, 4-	2.3E-05
Chloroform (Trichloromethane)	1.7E-05
Benzidine	1.7E-05
Dibromo-3-chloropropane, 1,2-	1.3E-05
Mercury	7.1E-06
Beryllium	6.2E-06
Hexachlorocyclopentadiene	5.8E-06
Thallium (I)	3.8E-06
4,6-Dinitro-2-methylphenol	3.3E-06
Manganese	2.4E-06
Vanadium	2.1E-06
Mercuric chloride	1.8E-06
Pentachlorophenol	1.6E-06
Silver	1.5E-06
Tetrachloroethylene (Perchloroethylene)	1.5E-06
Fluoranthene	9.0E-07
Zinc	7.8E-07
Nitrosodipropylamine, n-	7.4E-07
Barium	7.3E-07
Aluminum	4.7E-07
Antimony	4.4E-07
Bromoform (tribromomethane)	4.3E-07
Chromium	4.2E-07
Chromium, hexavalent	4.2E-07
Chlorobenzene	4.0E-07
Benzoic Acid	3.4E-07
Dinitrotoluene, 2,4-	3.4E-07
Selenium	3.3E-07
Benzene	3.1E-07
Ethylhexyl phthalate, bis-2-	3.0E-07
Methylene chloride	3.0E-07
3-Penten-2-one, 4-methyl	2.9E-07
Bromodichloromethane	2.9E-07
Dinitrotoluene, 2,6-	2.7E-07
Dibromochloromethane	2.7E-07
Methyl bromide (Bromomethane)	2.2E-07
Dinitrophenol, 2,4-	1.9E-07
Nitrophenol, 4-	1.8E-07
Nitroaniline, 3-	1.8E-07
Chloronaphthalene,2-	1.7E-07
Dichlorobenzidine, 3,3'-	1.4E-07
Methylene bromide	1.3E-07
PentaCDF, 2,3,4,7,8-	1.2E-07
Pentachloronitrobenzene (PCNB)	1.1E-07
Toluene	1.1E-07
Chlorobenzilate	8.5E-08
Dimethylphenol, 2,4-	7.8E-08
Acrylonitrile	7.6E-08
Nitrophenol, 2-	6.7E-08
Heptachlor	6.1E-08
Carbon Tetrachloride	6.1E-08
Carbazole	6.0E-08
Benzaldehyde	5.9E-08
Dinitrobenzene, 1,3-	5.6E-08
Methyl ethyl ketone (2-Butanone)	5.3E-08
Benzyl alcohol	5.3E-08
Phenanthrene	4.2E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Nitroaniline, 4-	3.8E-08
Benzonitrile	3.8E-08
Di-n-butyl phthalate	3.8E-08
Aniline	3.7E-08
Carbon Disulfide	3.5E-08
Methyl chloride (Chloromethane)	3.3E-08
Heptachlor epoxide	3.3E-08
Cobalt	3.1E-08
Phenol	3.1E-08
Endrin	2.5E-08
Chlorophenol, 2-	2.2E-08
Chloroaniline, p-	2.1E-08
Trichlorobenzene, 1,2,3-	1.8E-08
Acetone	1.8E-08
Bromophenyl-phenylether, 4-	1.7E-08
Chloro-3-methylphenol, 4-	1.7E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene	1.6E-08
Naphthalene	1.6E-08
Acetophenone	1.6E-08
Cresol, o-	1.6E-08
N-nitrosodimethylamine	1.4E-08
Butylbenzylphthalate	1.1E-08
Chlordane	1.1E-08
Dichlorobenzene, 1,3-	1.1E-08
2,5-Dimethylheptane	1.1E-08
Diethyl phthalate	1.0E-08
Acenaphthylene	1.0E-08
Tetrachloroethane, 1,1,2,2-	1.0E-08
Vinyl Acetate	9.9E-09
Dichloropropene, 1,3- (cis)	9.1E-09
Xylene, p-	8.8E-09
Xylene, m-	8.8E-09
Bis(2-chloroethoxy) methane	8.5E-09
Trichlorophenol, 2,4,5-	8.3E-09
Nitroaniline, 2-	8.1E-09
Nitrobenzene	8.1E-09
Dichlorophenol, 2,4-	7.5E-09
Benzo(b)fluoranthene	7.4E-09
2-Hexanone	7.2E-09
Hexachloroethane (Perchloroethane	7.2E-09
Cresol, p-	7.0E-09
Cresol, m-	7.0E-09
Dimethyl phthalate	6.9E-09
Endosulfan I	6.6E-09
Trichlorophenol, 2,4,6-	6.6E-09
BHC, beta-	6.1E-09
Pyridine	5.8E-09
Dibenzofuran	5.5E-09
Diphenylamine	5.5E-09
Bromobenzene	5.1E-09
Aldrin	5.0E-09
Tetrachlorobenzene, 1,2,4,5-	5.0E-09
Nitrosodiphenylamine, N-	4.9E-09
Isophorone	4.9E-09
Pentachlorobenzene	4.6E-09
Di-n-octylphthalate	4.5E-09
Trichlorobenzene, 1,2,4-	4.1E-09
Chrysene	4.0E-09
Aroclor 1254	3.7E-09
Diphenylhydrazine,1,2-	3.6E-09
3-Ethyl benzaldehyde	3.5E-09
4-Ethyl benzaldehyde	3.5E-09
Trichloropropane, 1,2,3-	3.2E-09
DDT, 4-4'-	3.1E-09
Butylbenzene, sec	3.0E-09
Xylene, o-	3.0E-09
1,1-Dichloropropene	2.6E-09
Trichloroethane, 1,1,2-	2.5E-09
Dieldrin	2.4E-09
Benzo(a)Anthracene	2.4E-09
BHC, alpha-	2.3E-09

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Benzo(k)fluoranthene	2.1E-09
Styrene	2.1E-09
Bis(2-chlorethyl)ether	2.1E-09
2,2'-oxybis (1-Chloropropane)	2.0E-09
Iodomethane	1.9E-09
Indeno(1,2,3-cd) pyrene	1.5E-09
Methyl isobutyl ketone	1.4E-09
Benzo(a)pyrene	1.4E-09
gamma-BHC (Lindane)	1.2E-09
TetraCDD, 2,3,7,8-	1.1E-09
TetraCDF, 2,3,7,8-	1.0E-09
Ethylene dibromide	1.0E-09
Trichloroethylene	9.4E-10
Tetrahydrofuran	9.4E-10
Pyrene	9.1E-10
DDD, 4,4'-	9.1E-10
Tetrachloroethane, 1,1,1,2-	8.1E-10
1,3-Dichloropropane	7.7E-10
Butylbenzene, n-	7.4E-10
Dichloroethylene 1,1-	7.2E-10
2,2-Dichloropropane	7.1E-10
Butylbenzene, tert	7.1E-10
Vinyl Chloride	6.6E-10
PentaCDD, 1,2,3,7,8-	6.5E-10
Trichloroethane, 1,1,1-	6.3E-10
Anthracene	5.8E-10
Acenaphthene	5.7E-10
2-Methylnaphthalene	5.5E-10
Trimethylbenzene, 1,3,5-	5.0E-10
Dichlorobenzene, 1,2-	4.4E-10
HexaCDF, 1,2,3,6,7,8-	4.1E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	4.1E-10
HexaCDF, 2,3,4,6,7,8-	3.3E-10
Methoxychlor	2.8E-10
HexaCDF, 1,2,3,4,7,8-	2.7E-10
Dichlorobenzene,1,4-	2.6E-10
DDE, 4,4'-	2.5E-10
Fluorene	2.2E-10
Cumene (Isopropylbenzene)	2.2E-10
2-Chlorotoluene	1.9E-10
4-Chlorotoluene	1.9E-10
Ethylene Glycol	1.7E-10
Propylbenzene, n-	1.6E-10
Trichlorofluoromethane (Freon 11)	1.4E-10
1,2,4-Trimethylbenzene	1.4E-10
Dichloroethylene, cis-1,2-	1.3E-10
Ethylbenzene	1.2E-10
Dichloropropane, 1,2-	1.2E-10
PentaCDF, 1,2,3,7,8-	1.1E-10
HexaCDD, 1,2,3,4,7,8-	8.8E-11
Benzo(g,h,i)perylene	8.4E-11
Chloroethane	8.1E-11
Dichlorodifluoromethane	7.9E-11
Bromochloromethane	7.8E-11
methyl tert-butyl ether	6.1E-11
Propylene oxide	4.3E-11
Dichloroethylene-1,2 (trans)	4.0E-11
Dichloroethane 1,1-	3.8E-11
HexaCDD, 1,2,3,7,8,9-	1.1E-11
Methyl methacrylate	1.1E-11
HexaCDD, 1,2,3,6,7,8-	6.4E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	5.1E-12
Dioxane, 1,4-	4.0E-12
Dibenz(a,h)anthracene	1.6E-12
HeptaCDF, 1,2,3,4,6,7,8-	1.1E-12
HexaCDF, 1,2,3,7,8,9-	5.6E-13
Acrylic Acid	4.0E-13
OctaCDF, 1,2,3,4,6,7,8,9-	3.1E-13
1-Hexane (n-hexane)	7.1E-14
HeptaCDF, 1,2,3,4,7,8,9-	7.0E-14
OctaCDD, 1,2,3,4,6,7,8,9-	6.5E-14

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
HeptaCDD, 1,2,3,4,6,7,8-	5.1E-14
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide'	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone'	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC
Total (b)	1.4E-01
R_4 resident farmer	
Nitrogen dioxide	1.6E-01
Sulfur dioxide	5.9E-02
Arsenic	5.5E-03
Chlorine	2.3E-03
Hydrogen chloride	1.4E-03
Lead	6.3E-04
Nickel	3.6E-04
Copper	3.0E-04
Cadmium	7.3E-05
Hexachlorobenzene	4.1E-05
Chlorophenyl-phenylether, 4-	3.7E-05
Benzidine	2.8E-05
Chloroform (Trichloromethane)	2.8E-05
Dibromo-3-chloropropane, 1,2-	2.2E-05
Mercury	1.1E-05
Beryllium	1.0E-05
Hexachlorocyclopentadiene	9.4E-06
Thallium (I)	6.3E-06
4,6-Dinitro-2-methylphenol	5.4E-06
Manganese	4.0E-06
Vanadium	3.6E-06
Mercuric chloride	2.9E-06
Silver	2.6E-06
Pentachlorophenol	2.6E-06
Tetrachloroethylene (Perchloroethylene'	2.4E-06
Fluoranthene	1.5E-06
Zinc	1.3E-06
Barium	1.2E-06
Nitrosodipropylamine, n-	1.2E-06
Aluminum	8.0E-07
Antimony	7.2E-07
Chromium	7.0E-07
Chromium, hexavalent	7.0E-07
Bromoform (tribromomethane'	7.0E-07
Chlorobenzene	6.6E-07
Benzoic Acid	5.6E-07
Dinitrotoluene, 2,4-	5.5E-07
Selenium	5.5E-07
Ethylhexyl phthalate, bis-2-	5.1E-07
Benzene	5.1E-07
Methylene chloride	4.9E-07
3-Penten-2-one, 4-methyl	4.7E-07
Bromodichloromethane	4.6E-07
Dinitrotoluene, 2,6-	4.4E-07
Dibromochloromethane	4.3E-07
Methyl bromide (Bromomethane'	3.6E-07
Dinitrophenol, 2,4-	3.0E-07
Nitrophenol, 4-	2.9E-07
Nitroaniline, 3-	2.9E-07

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Chloronaphthalene,2-	2.8E-07
Dichlorobenzidine, 3,3'-	2.3E-07
Methylene bromide	2.1E-07
PentaCDF, 2,3,4,7,8-	2.1E-07
Pentachloronitrobenzene (PCNB)	1.8E-07
Toluene	1.8E-07
Chlorobenzilate	1.4E-07
Dimethylphenol, 2,4-	1.3E-07
Acrylonitrile	1.2E-07
Nitrophenol, 2-	1.1E-07
Heptachlor	1.0E-07
Carbon Tetrachloride	9.9E-08
Carbazole	9.8E-08
Benzaldehyde	9.6E-08
Dinitrobenzene, 1,3-	9.2E-08
Methyl ethyl ketone (2-Butanone)	8.6E-08
Benzyl alcohol	8.6E-08
Phenanthrene	6.8E-08
Nitroaniline, 4-	6.2E-08
Benzonitrile	6.2E-08
Di-n-butyl phthalate	6.2E-08
Aniline	6.0E-08
Carbon Disulfide	5.7E-08
Methyl chloride (Chloromethane)	5.4E-08
Heptachlor epoxide	5.3E-08
Cobalt	5.2E-08
Phenol	5.0E-08
Endrin	4.0E-08
Chlorophenol, 2-	3.6E-08
Chloroaniline, p-	3.5E-08
Trichlorobenzene, 1,2,3-	2.9E-08
Acetone	2.9E-08
Bromophenyl-phenylether, 4-	2.8E-08
Chloro-3-methylphenol, 4-	2.7E-08
Hexachloro-1,3-butadiene (Perchlorobutadiene)	2.6E-08
Naphthalene	2.6E-08
Acetophenone	2.6E-08
Cresol, o-	2.6E-08
N-nitrosodimethylamine	2.3E-08
Butylbenzylphthalate	1.9E-08
Chlordane	1.8E-08
Dichlorobenzene, 1,3-	1.8E-08
2,5-Dimethylheptane	1.7E-08
Diethyl phthalate	1.7E-08
Acenaphthylene	1.7E-08
Tetrachloroethane, 1,1,2,2-	1.6E-08
Vinyl Acetate	1.6E-08
Dichloropropene, 1,3- (cis)	1.5E-08
Xylene, p-	1.4E-08
Xylene, m-	1.4E-08
Bis(2-chloroethoxy) methane	1.4E-08
Trichlorophenol, 2,4,5-	1.3E-08
Nitroaniline, 2-	1.3E-08
Nitrobenzene	1.3E-08
Dichlorophenol, 2,4-	1.2E-08
Benzo(b)fluoranthene	1.2E-08
2-Hexanone	1.2E-08
Hexachloroethane (Perchloroethane	1.2E-08
Cresol, p-	1.1E-08
Cresol, m-	1.1E-08
Dimethyl phthalate	1.1E-08
Endosulfan I	1.1E-08
Trichlorophenol, 2,4,6-	1.1E-08
BHC, beta-	9.9E-09
Pyridine	9.4E-09
Dibenzofuran	8.9E-09
Diphenylamine	8.9E-09
Bromobenzene	8.3E-09
Aldrin	8.1E-09
Tetrachlorobenzene, 1,2,4,5-	8.1E-09
Nitrosodiphenylamine, N-	8.0E-09

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS -
UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Isophorone	7.9E-09
Pentachlorobenzene	7.5E-09
Di-n-octylphthalate	7.4E-09
Chrysene	6.6E-09
Trichlorobenzene, 1,2,4-	6.6E-09
Aroclor 1254	6.1E-09
Diphenylhydrazine,1,2-	5.8E-09
3-Ethyl benzaldehyde	5.7E-09
4-Ethyl benzaldehyde	5.7E-09
Trichloropropane, 1,2,3-	5.2E-09
DDT, 4-4'-	5.1E-09
Butylbenzene, sec	4.9E-09
Xylene, o-	4.9E-09
1,1-Dichloropropene	4.3E-09
Trichloroethane, 1,1,2-	4.0E-09
Benzo(a)Anthracene	3.9E-09
Dieldrin	3.8E-09
BHC, alpha-	3.8E-09
Benzo(k)fluoranthene	3.6E-09
Styrene	3.4E-09
Bis(2-chlorethyl)ether	3.4E-09
2,2'-oxybis (1-Chloropropane)	3.2E-09
Iodomethane	3.0E-09
Indeno(1,2,3-cd) pyrene	2.6E-09
Methyl isobutyl ketone	2.3E-09
Benzo(a)pyrene	2.3E-09
gamma-BHC (Lindane)	1.9E-09
TetraCDD, 2,3,7,8-	1.9E-09
TetraCDF, 2,3,7,8-	1.7E-09
Ethylene dibromide	1.6E-09
Trichloroethylene	1.5E-09
Tetrahydrofuran	1.5E-09
DDD, 4,4'-	1.5E-09
Pyrene	1.5E-09
Tetrachloroethane, 1,1,1,2-	1.3E-09
1,3-Dichloropropane	1.2E-09
Butylbenzene, n-	1.2E-09
Dichloroethylene 1,1-	1.2E-09
2,2-Dichloropropane	1.2E-09
Butylbenzene, tert	1.2E-09
PentaCDD, 1,2,3,7,8-	1.1E-09
Vinyl Chloride	1.1E-09
Trichloroethane, 1,1,1-	1.0E-09
Anthracene	9.5E-10
Acenaphthene	9.2E-10
2-Methylnaphthalene	8.9E-10
Trimethylbenzene, 1,3,5-	8.1E-10
Dichlorobenzene, 1,2-	7.1E-10
HexaCDF, 1,2,3,6,7,8-	7.0E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	6.6E-10
HexaCDF, 2,3,4,6,7,8-	5.6E-10
HexaCDF, 1,2,3,4,7,8-	4.6E-10
Methoxychlor	4.6E-10
Dichlorobenzene,1,4-	4.2E-10
DDE, 4,4'-	4.1E-10
Fluorene	3.6E-10
Cumene (Isopropylbenzene)	3.6E-10
2-Chlorotoluene	3.1E-10
4-Chlorotoluene	3.1E-10
Ethylene Glycol	2.7E-10
Propylbenzene, n-	2.6E-10
Trichlorofluoromethane (Freon 11)	2.3E-10
1,2,4-Trimethylbenzene	2.3E-10
Dichloroethylene, cis-1,2-	2.0E-10
Ethylbenzene	2.0E-10
Dichloropropane, 1,2-	2.0E-10
PentaCDF, 1,2,3,7,8-	1.9E-10
HexaCDD, 1,2,3,4,7,8-	1.5E-10
Benzo(g,h,i)perylene	1.4E-10
Chloroethane	1.3E-10
Dichlorodifluoromethane	1.3E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - UPSET CONDITIONS (MAXIMUM MEASURED EMISSION RATE *10)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Bromochloromethane	1.3E-10
methyl tert-butyl ether	9.9E-11
Propylene oxide	7.0E-11
Dichloroethylene-1,2 (trans)	6.5E-11
Dichloroethane 1,1-	6.2E-11
HexaCDD, 1,2,3,7,8,9-	1.8E-11
Methyl methacrylate	1.7E-11
HexaCDD, 1,2,3,6,7,8-	1.1E-11
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	8.3E-12
Dioxane, 1,4-	6.5E-12
Dibenz(a,h)anthracene	2.7E-12
HeptaCDF, 1,2,3,4,6,7,8-	1.8E-12
HexaCDF, 1,2,3,7,8,9-	9.4E-13
Acrylic Acid	6.5E-13
OctaCDF, 1,2,3,4,6,7,8,9-	5.2E-13
HeptaCDF, 1,2,3,4,7,8,9-	1.2E-13
1-Hexane (n-hexane)	1.2E-13
OctaCDD, 1,2,3,4,6,7,8,9-	1.1E-13
HeptaCDD, 1,2,3,4,6,7,8-	8.7E-14
Endosulfan sulfate	NC
2,5-Dione, 3-hexene	NC
Benzo(e)pyrene	NC
Perylene	NC
Phosphine imide, P,P,P-triphenyl	NC
Diallate	NC
9-Octadecenamide (oleamide)	NC
delta-BHC	NC
2-Methyl octane	NC
Endosulfan II	NC
Endrin ketone	NC
3-Penten-2-one (ethylidene acetone)	NC
2,5-Dimethylfuran	NC
Endrin aldehyde	NC
3-Hexen-2-one	NC
Benzoic acid, methyl ester (methyl benzoate	NC
Isopropyl toluene, p-	NC
Total (b)	2.3E-01

NC = Not calculated.

(a) Acute hazard quotients were calculated for all compounds with stack air emission rates and acute inhalation toxicity criteria.

(b) The total is based on the sum of all chemical-specific hazard quotients regardless of the type of health effects of the summed compounds. A total value summed across all compounds is used as a screening tool only, to determine if additional evaluation for specific types of health effects is warranted (i.e., if the total value is greater than 1).

ATTACHMENT B

FUGITIVE EMISSIONS RISK ASSESSMENT: DETAILED CHRONIC AND ACUTE RISK RESULTS INCLUDING TOTAL CHROMIUM AND HEXAVALENT CHROMIUM

ATTACHMENT B

Fugitive Air Emissions Risk Assessment
Chronic Inhalation Risk Results by Compound
(IRAP Software Output Information)

Receptor	Scenario	Compound	Inhalation Excess Lifetime Cancer Risk	Inhalation Non-Cancer Hazard Quotient
R_1 resident	resident_adult	1,3-Butadiene	1.0E-08	3.9E-04
R_1 resident	resident_adult	1-Hexane (n-hexane)	0.0E+00	3.7E-07
R_1 resident	resident_adult	Acrylonitrile	1.8E-09	3.2E-05
R_1 resident	resident_adult	Arsenic	2.3E-14	4.2E-10
R_1 resident	resident_adult	Benzene	6.0E-11	6.0E-07
R_1 resident	resident_adult	Beryllium	1.1E-15	5.3E-11
R_1 resident	resident_adult	Cadmium	4.5E-15	2.9E-11
R_1 resident	resident_adult	Chloroform (Trichloromethane)	8.7E-12	2.9E-06
R_1 resident	resident_adult	Chromium	0.0E+00	4.0E-15
R_1 resident	resident_adult	Chromium, hexavalent	1.5E-14	3.6E-10
R_1 resident	resident_adult	Cobalt	0.0E+00	2.0E-10
R_1 resident	resident_adult	Copper	0.0E+00	6.1E-12
R_1 resident	resident_adult	Cyclohexane	0.0E+00	5.6E-08
R_1 resident	resident_adult	Dichlorobenzene,1,4-	1.2E-11	3.1E-09
R_1 resident	resident_adult	Ethylbenzene	0.0E+00	5.3E-09
R_1 resident	resident_adult	Ethylene Dibromide	3.0E-11	1.3E-08
R_1 resident	resident_adult	Ethylene Glycol	0.0E+00	9.6E-11
R_1 resident	resident_adult	Naphthalene	0.0E+00	8.6E-09
R_1 resident	resident_adult	Nickel	7.1E-15	3.5E-10
R_1 resident	resident_adult	Styrene	0.0E+00	5.8E-09
R_1 resident	resident_adult	Tetrachloroethylene (Perchloroethylene)	2.7E-11	2.6E-08
R_1 resident	resident_adult	Toluene	0.0E+00	2.1E-08
R_1 resident	resident_adult	Trichloroethylene	5.3E-12	1.0E-08
R_1 resident	resident_adult	Vinyl Chloride	3.7E-11	9.9E-08
		Total	1E-08	4E-04
R_1 resident	resident_child	1,3-Butadiene	2.0E-09	3.9E-04
R_1 resident	resident_child	1-Hexane (n-hexane)	0.0E+00	3.7E-07
R_1 resident	resident_child	Acrylonitrile	3.7E-10	3.2E-05
R_1 resident	resident_child	Arsenic	4.7E-15	4.2E-10
R_1 resident	resident_child	Benzene	1.2E-11	6.0E-07
R_1 resident	resident_child	Beryllium	2.2E-16	5.3E-11
R_1 resident	resident_child	Cadmium	9.1E-16	2.9E-11
R_1 resident	resident_child	Chloroform (Trichloromethane)	1.7E-12	2.9E-06
R_1 resident	resident_child	Chromium	0.0E+00	4.0E-15
R_1 resident	resident_child	Chromium, hexavalent	2.9E-15	3.6E-10
R_1 resident	resident_child	Cobalt	0.0E+00	2.0E-10
R_1 resident	resident_child	Copper	0.0E+00	6.1E-12
R_1 resident	resident_child	Cyclohexane	0.0E+00	5.6E-08
R_1 resident	resident_child	Dichlorobenzene,1,4-	2.3E-12	3.1E-09
R_1 resident	resident_child	Ethylbenzene	0.0E+00	5.3E-09
R_1 resident	resident_child	Ethylene Dibromide	6.1E-12	1.3E-08
R_1 resident	resident_child	Ethylene Glycol	0.0E+00	9.6E-11
R_1 resident	resident_child	Naphthalene	0.0E+00	8.6E-09
R_1 resident	resident_child	Nickel	1.4E-15	3.5E-10
R_1 resident	resident_child	Styrene	0.0E+00	5.8E-09
R_1 resident	resident_child	Tetrachloroethylene (Perchloroethylene)	5.3E-12	2.6E-08
R_1 resident	resident_child	Toluene	0.0E+00	2.1E-08
R_1 resident	resident_child	Trichloroethylene	1.1E-12	1.0E-08
R_1 resident	resident_child	Vinyl Chloride	7.5E-12	9.9E-08
		Total	2E-09	4E-04
R_2 resident	resident_adult	1,3-Butadiene	2.4E-08	9.2E-04
R_2 resident	resident_adult	1-Hexane (n-hexane)	0.0E+00	8.7E-07
R_2 resident	resident_adult	Acrylonitrile	4.4E-09	7.5E-05
R_2 resident	resident_adult	Arsenic	5.5E-14	1.0E-09
R_2 resident	resident_adult	Benzene	1.4E-10	1.4E-06
R_2 resident	resident_adult	Beryllium	2.6E-15	1.3E-10
R_2 resident	resident_adult	Cadmium	1.1E-14	7.0E-11
R_2 resident	resident_adult	Chloroform (Trichloromethane)	2.1E-11	6.9E-06
R_2 resident	resident_adult	Chromium	0.0E+00	9.5E-15
R_2 resident	resident_adult	Chromium, hexavalent	3.5E-14	8.4E-10
R_2 resident	resident_adult	Cobalt	0.0E+00	4.8E-10
R_2 resident	resident_adult	Copper	0.0E+00	1.4E-11

Fugitive Air Emissions Risk Assessment
Chronic Inhalation Risk Results by Compound
(IRAP Software Output Information)

Receptor	Scenario	Compound	Inhalation Excess Lifetime Cancer Risk	Inhalation Non-Cancer Hazard Quotient
R_2 resident	resident_adult	Cyclohexane	0.0E+00	1.3E-07
R_2 resident	resident_adult	Dichlorobenzene,1,4-	2.7E-11	7.3E-09
R_2 resident	resident_adult	Ethylbenzene	0.0E+00	1.2E-08
R_2 resident	resident_adult	Ethylene Dibromide	7.2E-11	3.1E-08
R_2 resident	resident_adult	Ethylene Glycol	0.0E+00	2.3E-10
R_2 resident	resident_adult	Naphthalene	0.0E+00	2.0E-08
R_2 resident	resident_adult	Nickel	1.7E-14	8.2E-10
R_2 resident	resident_adult	Styrene	0.0E+00	1.4E-08
R_2 resident	resident_adult	Tetrachloroethylene (Perchloroethylene)	6.3E-11	6.2E-08
R_2 resident	resident_adult	Toluene	0.0E+00	5.0E-08
R_2 resident	resident_adult	Trichloroethylene	1.3E-11	2.4E-08
R_2 resident	resident_adult	Vinyl Chloride	8.9E-11	2.3E-07
		Total	3E-08	1E-03
R_2 resident	resident_child	1,3-Butadiene	4.7E-09	9.2E-04
R_2 resident	resident_child	1-Hexane (n-hexane)	0.0E+00	8.7E-07
R_2 resident	resident_child	Acrylonitrile	8.7E-10	7.5E-05
R_2 resident	resident_child	Arsenic	1.1E-14	1.0E-09
R_2 resident	resident_child	Benzene	2.8E-11	1.4E-06
R_2 resident	resident_child	Beryllium	5.2E-16	1.3E-10
R_2 resident	resident_child	Cadmium	2.1E-15	7.0E-11
R_2 resident	resident_child	Chloroform (Trichloromethane)	4.1E-12	6.9E-06
R_2 resident	resident_child	Chromium	0.0E+00	9.5E-15
R_2 resident	resident_child	Chromium, hexavalent	6.9E-15	8.4E-10
R_2 resident	resident_child	Cobalt	0.0E+00	4.8E-10
R_2 resident	resident_child	Copper	0.0E+00	1.4E-11
R_2 resident	resident_child	Cyclohexane	0.0E+00	1.3E-07
R_2 resident	resident_child	Dichlorobenzene,1,4-	5.5E-12	7.3E-09
R_2 resident	resident_child	Ethylbenzene	0.0E+00	1.2E-08
R_2 resident	resident_child	Ethylene Dibromide	1.4E-11	3.1E-08
R_2 resident	resident_child	Ethylene Glycol	0.0E+00	2.3E-10
R_2 resident	resident_child	Naphthalene	0.0E+00	2.0E-08
R_2 resident	resident_child	Nickel	3.4E-15	8.2E-10
R_2 resident	resident_child	Styrene	0.0E+00	1.4E-08
R_2 resident	resident_child	Tetrachloroethylene (Perchloroethylene)	1.3E-11	6.2E-08
R_2 resident	resident_child	Toluene	0.0E+00	5.0E-08
R_2 resident	resident_child	Trichloroethylene	2.5E-12	2.4E-08
R_2 resident	resident_child	Vinyl Chloride	1.8E-11	2.3E-07
		Total	6E-09	1E-03
R_3 resident farmer	farmer_adult	1,3-Butadiene	3.9E-08	1.1E-03
R_3 resident farmer	farmer_adult	1-Hexane (n-hexane)	0.0E+00	1.1E-06
R_3 resident farmer	farmer_adult	Acrylonitrile	7.2E-09	9.3E-05
R_3 resident farmer	farmer_adult	Arsenic	9.2E-14	1.2E-09
R_3 resident farmer	farmer_adult	Benzene	2.4E-10	1.8E-06
R_3 resident farmer	farmer_adult	Beryllium	4.3E-15	1.6E-10
R_3 resident farmer	farmer_adult	Cadmium	1.8E-14	8.7E-11
R_3 resident farmer	farmer_adult	Chloroform (Trichloromethane)	3.4E-11	8.6E-06
R_3 resident farmer	farmer_adult	Chromium	0.0E+00	1.2E-14
R_3 resident farmer	farmer_adult	Chromium, hexavalent	5.8E-14	1.1E-09
R_3 resident farmer	farmer_adult	Cobalt	0.0E+00	6.0E-10
R_3 resident farmer	farmer_adult	Copper	0.0E+00	1.8E-11
R_3 resident farmer	farmer_adult	Cyclohexane	0.0E+00	1.6E-07
R_3 resident farmer	farmer_adult	Dichlorobenzene,1,4-	4.6E-11	9.1E-09
R_3 resident farmer	farmer_adult	Ethylbenzene	0.0E+00	1.5E-08
R_3 resident farmer	farmer_adult	Ethylene Dibromide	1.2E-10	3.9E-08
R_3 resident farmer	farmer_adult	Ethylene Glycol	0.0E+00	2.8E-10
R_3 resident farmer	farmer_adult	Naphthalene	0.0E+00	2.5E-08
R_3 resident farmer	farmer_adult	Nickel	2.8E-14	1.0E-09
R_3 resident farmer	farmer_adult	Styrene	0.0E+00	1.7E-08
R_3 resident farmer	farmer_adult	Tetrachloroethylene (Perchloroethylene)	1.0E-10	7.8E-08
R_3 resident farmer	farmer_adult	Toluene	0.0E+00	6.2E-08
R_3 resident farmer	farmer_adult	Trichloroethylene	2.1E-11	3.0E-08

Fugitive Air Emissions Risk Assessment
Chronic Inhalation Risk Results by Compound
(IRAP Software Output Information)

Receptor	Scenario	Compound	Inhalation Excess Lifetime Cancer Risk	Inhalation Non-Cancer Hazard Quotient
R_3 resident farmer	farmer_adult	Vinyl Chloride	1.5E-10	2.9E-07
		Total	5E-08	1E-03
R_3 resident farmer	farmer_child	1,3-Butadiene	5.9E-09	1.1E-03
R_3 resident farmer	farmer_child	1-Hexane (n-hexane)	0.0E+00	1.1E-06
R_3 resident farmer	farmer_child	Acrylonitrile	1.1E-09	9.3E-05
R_3 resident farmer	farmer_child	Arsenic	1.4E-14	1.2E-09
R_3 resident farmer	farmer_child	Benzene	3.5E-11	1.8E-06
R_3 resident farmer	farmer_child	Beryllium	6.4E-16	1.6E-10
R_3 resident farmer	farmer_child	Cadmium	2.7E-15	8.7E-11
R_3 resident farmer	farmer_child	Chloroform (Trichloromethane)	5.1E-12	8.6E-06
R_3 resident farmer	farmer_child	Chromium	0.0E+00	1.2E-14
R_3 resident farmer	farmer_child	Chromium, hexavalent	8.7E-15	1.1E-09
R_3 resident farmer	farmer_child	Cobalt	0.0E+00	6.0E-10
R_3 resident farmer	farmer_child	Copper	0.0E+00	1.8E-11
R_3 resident farmer	farmer_child	Cyclohexane	0.0E+00	1.6E-07
R_3 resident farmer	farmer_child	Dichlorobenzene,1,4-	6.8E-12	9.1E-09
R_3 resident farmer	farmer_child	Ethylbenzene	0.0E+00	1.5E-08
R_3 resident farmer	farmer_child	Ethylene Dibromide	1.8E-11	3.9E-08
R_3 resident farmer	farmer_child	Ethylene Glycol	0.0E+00	2.8E-10
R_3 resident farmer	farmer_child	Naphthalene	0.0E+00	2.5E-08
R_3 resident farmer	farmer_child	Nickel	4.2E-15	1.0E-09
R_3 resident farmer	farmer_child	Styrene	0.0E+00	1.7E-08
R_3 resident farmer	farmer_child	Tetrachloroethylene (Perchloroethylene)	1.6E-11	7.8E-08
R_3 resident farmer	farmer_child	Toluene	0.0E+00	6.2E-08
R_3 resident farmer	farmer_child	Trichloroethylene	3.1E-12	3.0E-08
R_3 resident farmer	farmer_child	Vinyl Chloride	2.2E-11	2.9E-07
		Total	7E-09	1E-03
R_4 resident farmer	farmer_adult	1,3-Butadiene	3.2E-08	9.4E-04
R_4 resident farmer	farmer_adult	1-Hexane (n-hexane)	0.0E+00	8.8E-07
R_4 resident farmer	farmer_adult	Acrylonitrile	5.9E-09	7.6E-05
R_4 resident farmer	farmer_adult	Arsenic	7.5E-14	1.0E-09
R_4 resident farmer	farmer_adult	Benzene	1.9E-10	1.4E-06
R_4 resident farmer	farmer_adult	Beryllium	3.5E-15	1.3E-10
R_4 resident farmer	farmer_adult	Cadmium	1.5E-14	7.1E-11
R_4 resident farmer	farmer_adult	Chloroform (Trichloromethane)	2.8E-11	7.0E-06
R_4 resident farmer	farmer_adult	Chromium	0.0E+00	9.7E-15
R_4 resident farmer	farmer_adult	Chromium, hexavalent	4.7E-14	8.6E-10
R_4 resident farmer	farmer_adult	Cobalt	0.0E+00	4.9E-10
R_4 resident farmer	farmer_adult	Copper	0.0E+00	1.5E-11
R_4 resident farmer	farmer_adult	Cyclohexane	0.0E+00	1.3E-07
R_4 resident farmer	farmer_adult	Dichlorobenzene,1,4-	3.7E-11	7.4E-09
R_4 resident farmer	farmer_adult	Ethylbenzene	0.0E+00	1.3E-08
R_4 resident farmer	farmer_adult	Ethylene Dibromide	9.7E-11	3.1E-08
R_4 resident farmer	farmer_adult	Ethylene Glycol	0.0E+00	2.3E-10
R_4 resident farmer	farmer_adult	Naphthalene	0.0E+00	2.1E-08
R_4 resident farmer	farmer_adult	Nickel	2.3E-14	8.3E-10
R_4 resident farmer	farmer_adult	Styrene	0.0E+00	1.4E-08
R_4 resident farmer	farmer_adult	Tetrachloroethylene (Perchloroethylene)	8.5E-11	6.3E-08
R_4 resident farmer	farmer_adult	Toluene	0.0E+00	5.1E-08
R_4 resident farmer	farmer_adult	Trichloroethylene	1.7E-11	2.5E-08
R_4 resident farmer	farmer_adult	Vinyl Chloride	1.2E-10	2.4E-07
		Total	4E-08	1E-03
R_4 resident farmer	farmer_child	1,3-Butadiene	4.8E-09	9.4E-04
R_4 resident farmer	farmer_child	1-Hexane (n-hexane)	0.0E+00	8.8E-07
R_4 resident farmer	farmer_child	Acrylonitrile	8.8E-10	7.6E-05
R_4 resident farmer	farmer_child	Arsenic	1.1E-14	1.0E-09
R_4 resident farmer	farmer_child	Benzene	2.9E-11	1.4E-06
R_4 resident farmer	farmer_child	Beryllium	5.2E-16	1.3E-10
R_4 resident farmer	farmer_child	Cadmium	2.2E-15	7.1E-11
R_4 resident farmer	farmer_child	Chloroform (Trichloromethane)	4.2E-12	7.0E-06
R_4 resident farmer	farmer_child	Chromium	0.0E+00	9.7E-15

Fugitive Air Emissions Risk Assessment
Chronic Inhalation Risk Results by Compound
(IRAP Software Output Information)

Receptor	Scenario	Compound	Inhalation Excess Lifetime Cancer Risk	Inhalation Non-Cancer Hazard Quotient
R_4 resident farmer	farmer_child	Chromium, hexavalent	7.0E-15	8.6E-10
R_4 resident farmer	farmer_child	Cobalt	0.0E+00	4.9E-10
R_4 resident farmer	farmer_child	Copper	0.0E+00	1.5E-11
R_4 resident farmer	farmer_child	Cyclohexane	0.0E+00	1.3E-07
R_4 resident farmer	farmer_child	Dichlorobenzene,1,4-	5.6E-12	7.4E-09
R_4 resident farmer	farmer_child	Ethylbenzene	0.0E+00	1.3E-08
R_4 resident farmer	farmer_child	Ethylene Dibromide	1.5E-11	3.1E-08
R_4 resident farmer	farmer_child	Ethylene Glycol	0.0E+00	2.3E-10
R_4 resident farmer	farmer_child	Naphthalene	0.0E+00	2.1E-08
R_4 resident farmer	farmer_child	Nickel	3.4E-15	8.3E-10
R_4 resident farmer	farmer_child	Styrene	0.0E+00	1.4E-08
R_4 resident farmer	farmer_child	Tetrachloroethylene (Perchloroethylene)	1.3E-11	6.3E-08
R_4 resident farmer	farmer_child	Toluene	0.0E+00	5.1E-08
R_4 resident farmer	farmer_child	Trichloroethylene	2.5E-12	2.5E-08
R_4 resident farmer	farmer_child	Vinyl Chloride	1.8E-11	2.4E-07
		Total	6E-09	1E-03
R_5 resident	resident_adult	1,3-Butadiene	2.1E-08	8.0E-04
R_5 resident	resident_adult	1-Hexane (n-hexane)	0.0E+00	7.5E-07
R_5 resident	resident_adult	Acrylonitrile	3.8E-09	6.5E-05
R_5 resident	resident_adult	Arsenic	4.8E-14	8.7E-10
R_5 resident	resident_adult	Benzene	1.2E-10	1.2E-06
R_5 resident	resident_adult	Beryllium	2.2E-15	1.1E-10
R_5 resident	resident_adult	Cadmium	9.3E-15	6.0E-11
R_5 resident	resident_adult	Chloroform (Trichloromethane)	1.8E-11	6.0E-06
R_5 resident	resident_adult	Chromium	0.0E+00	8.3E-15
R_5 resident	resident_adult	Chromium, hexavalent	3.0E-14	7.3E-10
R_5 resident	resident_adult	Cobalt	0.0E+00	4.2E-10
R_5 resident	resident_adult	Copper	0.0E+00	1.2E-11
R_5 resident	resident_adult	Cyclohexane	0.0E+00	1.1E-07
R_5 resident	resident_adult	Dichlorobenzene,1,4-	2.4E-11	6.3E-09
R_5 resident	resident_adult	Ethylbenzene	0.0E+00	1.1E-08
R_5 resident	resident_adult	Ethylene Dibromide	6.2E-11	2.7E-08
R_5 resident	resident_adult	Ethylene Glycol	0.0E+00	2.0E-10
R_5 resident	resident_adult	Naphthalene	0.0E+00	1.8E-08
R_5 resident	resident_adult	Nickel	1.5E-14	7.1E-10
R_5 resident	resident_adult	Styrene	0.0E+00	1.2E-08
R_5 resident	resident_adult	Tetrachloroethylene (Perchloroethylene)	5.5E-11	5.4E-08
R_5 resident	resident_adult	Toluene	0.0E+00	4.3E-08
R_5 resident	resident_adult	Trichloroethylene	1.1E-11	2.1E-08
R_5 resident	resident_adult	Vinyl Chloride	7.7E-11	2.0E-07
		Total	2E-08	9E-04
R_5 resident	resident_child	1,3-Butadiene	4.1E-09	8.0E-04
R_5 resident	resident_child	1-Hexane (n-hexane)	0.0E+00	7.5E-07
R_5 resident	resident_child	Acrylonitrile	7.5E-10	6.5E-05
R_5 resident	resident_child	Arsenic	9.6E-15	8.7E-10
R_5 resident	resident_child	Benzene	2.5E-11	1.2E-06
R_5 resident	resident_child	Beryllium	4.5E-16	1.1E-10
R_5 resident	resident_child	Cadmium	1.9E-15	6.0E-11
R_5 resident	resident_child	Chloroform (Trichloromethane)	3.6E-12	6.0E-06
R_5 resident	resident_child	Chromium	0.0E+00	8.3E-15
R_5 resident	resident_child	Chromium, hexavalent	6.0E-15	7.3E-10
R_5 resident	resident_child	Cobalt	0.0E+00	4.2E-10
R_5 resident	resident_child	Copper	0.0E+00	1.2E-11
R_5 resident	resident_child	Cyclohexane	0.0E+00	1.1E-07
R_5 resident	resident_child	Dichlorobenzene,1,4-	4.8E-12	6.3E-09
R_5 resident	resident_child	Ethylbenzene	0.0E+00	1.1E-08
R_5 resident	resident_child	Ethylene Dibromide	1.2E-11	2.7E-08
R_5 resident	resident_child	Ethylene Glycol	0.0E+00	2.0E-10
R_5 resident	resident_child	Naphthalene	0.0E+00	1.8E-08
R_5 resident	resident_child	Nickel	2.9E-15	7.1E-10
R_5 resident	resident_child	Styrene	0.0E+00	1.2E-08

Fugitive Air Emissions Risk Assessment
Chronic Inhalation Risk Results by Compound
(IRAP Software Output Information)

Receptor	Scenario	Compound	Inhalation Excess Lifetime Cancer Risk	Inhalation Non-Cancer Hazard Quotient
R_5 resident	resident_child	Tetrachloroethylene (Perchloroethylene)	1.1E-11	5.4E-08
R_5 resident	resident_child	Toluene	0.0E+00	4.3E-08
R_5 resident	resident_child	Trichloroethylene	2.2E-12	2.1E-08
R_5 resident	resident_child	Vinyl Chloride	1.5E-11	2.0E-07
		Total	5E-09	9E-04
R_6 resident	resident_adult	1,3-Butadiene	2.6E-08	1.0E-03
R_6 resident	resident_adult	1-Hexane (n-hexane)	0.0E+00	9.4E-07
R_6 resident	resident_adult	Acrylonitrile	4.7E-09	8.1E-05
R_6 resident	resident_adult	Arsenic	6.0E-14	1.1E-09
R_6 resident	resident_adult	Benzene	1.5E-10	1.5E-06
R_6 resident	resident_adult	Beryllium	2.8E-15	1.4E-10
R_6 resident	resident_adult	Cadmium	1.2E-14	7.5E-11
R_6 resident	resident_adult	Chloroform (Trichloromethane)	2.2E-11	7.5E-06
R_6 resident	resident_adult	Chromium	0.0E+00	1.0E-14
R_6 resident	resident_adult	Chromium, hexavalent	3.7E-14	9.1E-10
R_6 resident	resident_adult	Cobalt	0.0E+00	5.2E-10
R_6 resident	resident_adult	Copper	0.0E+00	1.5E-11
R_6 resident	resident_adult	Cyclohexane	0.0E+00	1.4E-07
R_6 resident	resident_adult	Dichlorobenzene,1,4-	3.0E-11	7.9E-09
R_6 resident	resident_adult	Ethylbenzene	0.0E+00	1.3E-08
R_6 resident	resident_adult	Ethylene Dibromide	7.7E-11	3.3E-08
R_6 resident	resident_adult	Ethylene Glycol	0.0E+00	2.4E-10
R_6 resident	resident_adult	Naphthalene	0.0E+00	2.2E-08
R_6 resident	resident_adult	Nickel	1.8E-14	8.8E-10
R_6 resident	resident_adult	Styrene	0.0E+00	1.5E-08
R_6 resident	resident_adult	Tetrachloroethylene (Perchloroethylene)	6.8E-11	6.7E-08
R_6 resident	resident_adult	Toluene	0.0E+00	5.4E-08
R_6 resident	resident_adult	Trichloroethylene	1.4E-11	2.6E-08
R_6 resident	resident_adult	Vinyl Chloride	9.6E-11	2.5E-07
		Total	3E-08	1E-03
R_6 resident	resident_child	1,3-Butadiene	5.1E-09	1.0E-03
R_6 resident	resident_child	1-Hexane (n-hexane)	0.0E+00	9.4E-07
R_6 resident	resident_child	Acrylonitrile	9.4E-10	8.1E-05
R_6 resident	resident_child	Arsenic	1.2E-14	1.1E-09
R_6 resident	resident_child	Benzene	3.1E-11	1.5E-06
R_6 resident	resident_child	Beryllium	5.6E-16	1.4E-10
R_6 resident	resident_child	Cadmium	2.3E-15	7.5E-11
R_6 resident	resident_child	Chloroform (Trichloromethane)	4.4E-12	7.5E-06
R_6 resident	resident_child	Chromium	0.0E+00	1.0E-14
R_6 resident	resident_child	Chromium, hexavalent	7.5E-15	9.1E-10
R_6 resident	resident_child	Cobalt	0.0E+00	5.2E-10
R_6 resident	resident_child	Copper	0.0E+00	1.5E-11
R_6 resident	resident_child	Cyclohexane	0.0E+00	1.4E-07
R_6 resident	resident_child	Dichlorobenzene,1,4-	5.9E-12	7.9E-09
R_6 resident	resident_child	Ethylbenzene	0.0E+00	1.3E-08
R_6 resident	resident_child	Ethylene Dibromide	1.5E-11	3.3E-08
R_6 resident	resident_child	Ethylene Glycol	0.0E+00	2.4E-10
R_6 resident	resident_child	Naphthalene	0.0E+00	2.2E-08
R_6 resident	resident_child	Nickel	3.6E-15	8.8E-10
R_6 resident	resident_child	Styrene	0.0E+00	1.5E-08
R_6 resident	resident_child	Tetrachloroethylene	1.4E-11	6.7E-08
R_6 resident	resident_child	Toluene	0.0E+00	5.4E-08
R_6 resident	resident_child	Trichloroethylene	2.7E-12	2.6E-08
R_6 resident	resident_child	Vinyl Chloride	1.9E-11	2.5E-07
		Total	6E-09	1E-03

IRAP-h View

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Average Concentration in All Delivered Spent Carbon Loads Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
A_1 maximum impact point (stack emissions)	
Benzene	2.1E-04
Chloroform (Trichloromethane)	8.8E-05
Acrylonitrile	4.3E-05
1,3-Butadiene	7.9E-06
Tetrachloroethylene (Perchloroethylene)	7.9E-06
Cyclohexane	5.0E-06
Styrene	4.1E-06
Toluene	3.4E-06
1-Hexane (n-hexane)	2.6E-06
Arsenic	1.0E-06
Vinyl Chloride	8.2E-07
Nickel	1.7E-07
Ethylbenzene	1.6E-07
Trichloroethylene	1.3E-07
Dichlorobenzene,1,4-	6.1E-08
Copper	3.2E-08
Ethylene Dibromide	8.8E-09
Naphthalene	5.1E-09
Beryllium	3.2E-09
Cadmium	2.9E-09
Chromium	2.1E-10
Cobalt	1.0E-10
Chromium, hexavalent (c)	0.0E+00
Total	3.7E-04
A_2 closest business	
Benzene	4.6E-04
Chloroform (Trichloromethane)	1.9E-04
Acrylonitrile	9.5E-05
1,3-Butadiene	1.7E-05
Tetrachloroethylene (Perchloroethylene)	1.7E-05
Cyclohexane	1.1E-05
Styrene	9.2E-06
Toluene	7.5E-06
1-Hexane (n-hexane)	5.7E-06
Arsenic	2.2E-06
Vinyl Chloride	1.8E-06
Nickel	3.8E-07
Ethylbenzene	3.5E-07
Trichloroethylene	2.9E-07
Dichlorobenzene,1,4-	1.4E-07
Copper	7.0E-08
Ethylene Dibromide	1.9E-08
Naphthalene	1.1E-08
Beryllium	7.0E-09
Cadmium	6.5E-09
Chromium	4.7E-10
Cobalt	2.3E-10
Chromium, hexavalent (c)	0.0E+00
Total	8.2E-04
A_3 maximum impact point (hopper fugitive emissions)	
Benzene	1.1E-02
Chloroform (Trichloromethane)	4.8E-03
Acrylonitrile	2.4E-03
1,3-Butadiene	4.3E-04
Tetrachloroethylene (Perchloroethylene)	4.3E-04
Cyclohexane	2.7E-04
Styrene	2.3E-04
Toluene	1.9E-04
1-Hexane (n-hexane)	1.4E-04
Arsenic	5.5E-05
Vinyl Chloride	4.5E-05
Nickel	9.5E-06

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Average Concentration in All Delivered Spent Carbon Loads Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Ethylbenzene	8.6E-06
Trichloroethylene	7.3E-06
Dichlorobenzene,1,4-	3.4E-06
Copper	1.7E-06
Ethylene Dibromide	4.8E-07
Naphthalene	2.8E-07
Beryllium	1.7E-07
Cadmium	1.6E-07
Chromium	1.2E-08
Cobalt	5.6E-09
Chromium, hexavalent (c)	0.0E+00
Total	2.0E-02
R_1 resident	
Benzene	2.8E-05
Chloroform (Trichloromethane)	1.2E-05
Acrylonitrile	5.8E-06
1,3-Butadiene	1.1E-06
Tetrachloroethylene (Perchloroethylene)	1.1E-06
Cyclohexane	6.8E-07
Styrene	5.7E-07
Toluene	4.6E-07
1-Hexane (n-hexane)	3.5E-07
Arsenic	1.4E-07
Vinyl Chloride	1.1E-07
Nickel	2.4E-08
Ethylbenzene	2.1E-08
Trichloroethylene	1.8E-08
Dichlorobenzene,1,4-	8.4E-09
Copper	4.3E-09
Ethylene Dibromide	1.2E-09
Naphthalene	7.0E-10
Beryllium	4.3E-10
Cadmium	4.0E-10
Chromium	2.9E-11
Cobalt	1.4E-11
Chromium, hexavalent (c)	0.0E+00
Total	5.1E-05
R_2 resident	
Benzene	2.6E-05
Chloroform (Trichloromethane)	1.1E-05
Acrylonitrile	5.4E-06
1,3-Butadiene	9.9E-07
Tetrachloroethylene (Perchloroethylene)	9.9E-07
Cyclohexane	6.3E-07
Styrene	5.2E-07
Toluene	4.3E-07
1-Hexane (n-hexane)	3.2E-07
Arsenic	1.3E-07
Vinyl Chloride	1.0E-07
Nickel	2.2E-08
Ethylbenzene	2.0E-08
Trichloroethylene	1.7E-08
Dichlorobenzene,1,4-	7.7E-09
Copper	4.0E-09
Ethylene Dibromide	1.1E-09
Naphthalene	6.5E-10
Beryllium	4.0E-10
Cadmium	3.7E-10
Chromium	2.7E-11
Cobalt	1.3E-11
Chromium, hexavalent (c)	0.0E+00
Total	4.7E-05
R_3 resident farmer	

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Average Concentration in All Delivered Spent Carbon Loads Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
Benzene	2.1E-05
Chloroform (Trichloromethane)	8.9E-06
Acrylonitrile	4.4E-06
1,3-Butadiene	8.0E-07
Tetrachloroethylene (Perchloroethylene)	8.0E-07
Cyclohexane	5.1E-07
Styrene	4.2E-07
Toluene	3.5E-07
1-Hexane (n-hexane)	2.6E-07
Arsenic	1.0E-07
Vinyl Chloride	8.4E-08
Nickel	1.8E-08
Ethylbenzene	1.6E-08
Trichloroethylene	1.4E-08
Dichlorobenzene,1,4-	6.3E-09
Copper	3.2E-09
Ethylene Dibromide	9.0E-10
Naphthalene	5.2E-10
Beryllium	3.2E-10
Cadmium	3.0E-10
Chromium	2.2E-11
Cobalt	1.0E-11
Chromium, hexavalent (c)	0.0E+00
Total	3.8E-05
R_4 resident farmer	
Benzene	2.7E-05
Chloroform (Trichloromethane)	1.2E-05
Acrylonitrile	5.6E-06
1,3-Butadiene	1.0E-06
Tetrachloroethylene (Perchloroethylene)	1.0E-06
Cyclohexane	6.6E-07
Styrene	5.4E-07
Toluene	4.5E-07
1-Hexane (n-hexane)	3.4E-07
Arsenic	1.3E-07
Vinyl Chloride	1.1E-07
Nickel	2.3E-08
Ethylbenzene	2.1E-08
Trichloroethylene	1.7E-08
Dichlorobenzene,1,4-	8.1E-09
Copper	4.2E-09
Ethylene Dibromide	1.2E-09
Naphthalene	6.7E-10
Beryllium	4.2E-10
Cadmium	3.9E-10
Chromium	2.8E-11
Cobalt	1.3E-11
Chromium, hexavalent (c)	0.0E+00
Total	4.9E-05
R_5 resident	
Benzene	3.4E-05
Chloroform (Trichloromethane)	1.4E-05
Acrylonitrile	7.0E-06
1,3-Butadiene	1.3E-06
Tetrachloroethylene (Perchloroethylene)	1.3E-06
Cyclohexane	8.2E-07
Styrene	6.8E-07
Toluene	5.6E-07
1-Hexane (n-hexane)	4.2E-07
Arsenic	1.6E-07
Vinyl Chloride	1.4E-07
Nickel	2.8E-08
Ethylbenzene	2.6E-08
Trichloroethylene	2.2E-08

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Average Concentration in All Delivered Spent Carbon Loads Over 4-Year Period (2003-2006 Data)

COMPOUND	**ACUTE INHALATION HAZARD QUOTIENT (a)**
Dichlorobenzene,1,4-	1.0E-08
Copper	5.2E-09
Ethylene Dibromide	1.4E-09
Naphthalene	8.4E-10
Beryllium	5.2E-10
Cadmium	4.8E-10
Chromium	3.5E-11
Cobalt	1.7E-11
Chromium, hexavalent (c)	0.0E+00
Total	6.1E-05
R_6 resident	
Benzene	1.5E-05
Chloroform (Trichloromethane)	6.5E-06
Acrylonitrile	3.2E-06
1,3-Butadiene	5.8E-07
Tetrachloroethylene (Perchloroethylene)	5.8E-07
Cyclohexane	3.7E-07
Styrene	3.1E-07
Toluene	2.5E-07
1-Hexane (n-hexane)	1.9E-07
Arsenic	7.4E-08
Vinyl Chloride	6.1E-08
Nickel	1.3E-08
Ethylbenzene	1.2E-08
Trichloroethylene	9.8E-09
Dichlorobenzene,1,4-	4.5E-09
Copper	2.3E-09
Ethylene Dibromide	6.5E-10
Naphthalene	3.8E-10
Beryllium	2.3E-10
Cadmium	2.2E-10
Chromium	1.6E-11
Cobalt	7.5E-12
Chromium, hexavalent (c)	0.0E+00
Total	2.7E-05

(a) Acute hazard quotients were calculated for all compounds with fugitive air emission rates and acute inhalation toxicity criteria.

(b) The total is based on the sum of all chemical-specific hazard quotients regardless of the type of health effects of the summed compounds. A total value summed across all compounds is used as a screening tool only, to determine if additional evaluation for specific types of health effects is warranted (i.e., if the total value is greater than 1).

(c) USEPA does not provide an acute inhalation reference concentration for hexavalent chromium.

ATTACHMENT C

EXCERPT FROM 2003 WORKING DRAFT
RISK ASSESSMENT WORKPLAN
FOR THE SIEMENS WATER TECHNOLOGIES CORP.
CARBON REACTIVATION FACILITY:

4.3 FUGITIVE EMISSIONS EXPOSURE ASSESSMENT

ATTACHMENT C
EXCERPT FROM 2003 WORKING DRAFT RISK ASSESSMENT WORKPLAN FOR THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REACTIVATION FACILITY

INTRODUCTION

The following text is an excerpt from the November 2003 Risk Assessment Workplan prepared for the Siemens Water Technologies Corp. (SWT) carbon reactivation facility. This excerpt is provided in response to USEPA Region IX comments on the July 2007 risk assessment that was performed for the facility. The information provided in this excerpt was based on facility data available in 2003.

The Workplan described the approaches proposed for the SWT facility risk assessment. The Workplan, updated by agreement with the USEPA to include elements of more recent 2005 Agency guidance for risk assessments of waste combustion facilities, was approved by USEPA prior to the initiation of the risk assessment.

EXCERPT FROM 2003 WORKPLAN

4.3 Fugitive Emissions Exposure Assessment

USEPA (2001a) requested that Westates' risk analysis address fugitive emissions potentially associated with the carbon reactivation facility including waste unloading, handling and processing. This section provides an overview of potential sources of fugitive emissions related to spent carbon at the facility in addition to a discussion of regulatory requirements, and engineering and institutional controls that are in place to minimize potential fugitive emissions. This discussion is used to identify the potential fugitive emission source related to spent carbon considered most likely to impact ambient air and thus proposed for detailed evaluation. This section also describes the exposure assessment approach that will be used to quantitatively evaluate the selected fugitive emissions source.

4.3.1 Potential for Fugitive Emissions from the Westates Facility

Processes involving spent carbon at the Westates facility that have the potential for fugitive particulate and volatile organic compound (VOC) emissions include:

- Handling of spent carbon containers received at the facility,
- Spent carbon unloading operations,
- Storage of spent carbon at the facility,
- Reactivation of spent carbon, and
- Production and bagging of reactivated carbon.

Potential fugitive emissions from each of these activities are reduced through standard work practices, facility design, and air pollution control (APC) devices. In addition, the intrinsic highly adsorptive nature of spent carbon results in very low partitioning of contaminants from the carbon to the atmosphere.

Potential fugitive emission sources at the facility are addressed by the USEPA under:

- the National Emission Standard for Benzene Waste Operations, Subpart FF of 40 CFR Part 61 (part of USEPA's program addressing National Emission Standards for Hazardous Air Pollutants or NESHAPs),
- the Resource Conservation and Recovery Act (RCRA) Subpart CC, [1] and
- the Potential to Emit Transition Policy for Part 71 Implementation (part of USEPA's Clean Air Act program).

4.3.1.1 Spent Carbon Containers

All containers received at the facility that contain spent carbon classified as hazardous waste under RCRA and all containers of spent carbon received from a facility that is regulated under the benzene NESHAP rule must be managed in accordance with strict USEPA requirements. These requirements include assuring that the spent carbon containers are completely sealed; this is initially accomplished by the spent carbon generators through both visual inspections of containers and VOC monitoring around the seals of containers. Then upon arrival at the Westates facility, containers are again visually inspected for proper seals.

The Westates facility currently stores sealed containers of spent carbon for up to one year, although most such containers are typically unloaded into the unloading hopper H-2 within about one month. These containers are also visually inspected during routine quarterly plant inspections. Rolloff containers and slurry trucks unload spent carbon at the time of delivery into hopper H-1. Supersacks and other smaller containers unloaded at H-1 may be stored for up to one year but are usually unloaded within about one to three months. Although not required, similar practices are typically followed for non-RCRA classified spent carbon as well.

4.3.1.2 Spent Carbon Unloading

Engineering and work practices during unloading operations at the facility's two hoppers are designed to limit the potential for fugitive dust emissions. Moreover, at no time other than when spent carbon is being unloaded into one of the hoppers is spent carbon exposed directly to the ambient environment. The two spent carbon hoppers are considered in the Part 71 Implementation program, but are not specifically regulated under the benzene Subpart FF standard or RCRA Subpart CC.

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[1] USEPA's air emission control standards under RCRA for certain hazardous waste management units (tanks and containers) are generally known as the Subpart CC standards, found at 40 CFR Parts 264 and 265. USEPA has also developed national emissions standards for hazardous air pollutants (NESHAPS) under the Clean Air Act specifically for benzene, known as the National Emission Standard for Benzene Waste Operations, Subpart FF of 40 CFR Part 61. RCRA waste management units that are operated in compliance with the Subpart FF standards are generally exempt from the RCRA Subpart CC standards (because the practices used to control potential benzene emissions will also control other volatile organic compound emissions, meeting the Subpart CC requirements as well. See 40 CFR 264.1080(b)(7) and 40 CFR 265.1080(b)(7)). (See 40 CFR 264.1080 and 40 CFR 265.1080 for Subpart CC standards and 40 CFR 61.340 for Subpart FF standards.)

Roughly 52% of the spent carbon unloaded at hopper H-1 and 47% of the spent carbon unloaded at hopper H-2 is wet (saturated at roughly 50% moisture content by weight) and, therefore, do not generate fugitive dusts. Moreover, only a very small percentage of the dry spent carbon may be fine particulates. Powdered activated carbon is not accepted at the facility.

A hand-held water spray hose is used at H-1 as the material exits the containers to minimize potential dust emissions during unloading of dry spent carbon as well as to facilitate transfer of the spent carbon from the hopper through the piping system to the storage tanks. A hand-held water spray is also occasionally used to minimize dust emissions while unloading at hopper H-2 inside the spent carbon storage building.

An exhaust ventilation system is used for both hoppers, drawing roughly 2,500 cubic feet per minute of air from several ducts inside the hoppers through a fabric filter baghouse (BH-2) and then a carbon adsorber (WS-2). Particulate matter collected in the baghouse is periodically emptied into a container and placed in the RCRA-regulated debris bin maintained on site. Waste in the debris bin is sent to the RCRA-regulated Aptus, Utah incinerator facility every 60-90 days.

4.3.1.3 Spent Carbon Storage and Furnace Feed Hopper

All spent carbon storage tanks and the furnace feed hopper used at the facility are regulated under the benzene NESHAP Subpart FF air emission regulation which effectively minimizes potential VOC emissions. Although this regulation focuses on controlling benzene emissions, it ultimately achieves control of all VOC emissions. The tanks used to store spent carbon, as well as the furnace feed hopper and the water recycle tanks, have been constructed and are managed to comply with these regulations. The spent carbon storage tanks (tanks T-1, T-2, T-5, T-6), the furnace feed hopper (T-18) and the primary and secondary water recycle tanks (T-9 and T-12) are all fixed-roof, closed-vent storage vessels from which all vapors are passively routed through activated carbon adsorbers. The control efficiency of the carbon adsorbers is at least 95% for organic compounds and at least 98% for benzene. The carbon in these systems is changed over every 40 days for the adsorber that vents tanks T-1, T-2, T-5, T-6, T-9 and T-12. The adsorber that serves the furnace feed hopper T-18 is changed every 38 days. The changeout time for each of these adsorbers has been set based on engineering calculations to assure that the carbon does not approach its maximum collection efficiency.

The holding and discharge water tank, tank T-11, which is used for water and not spent carbon, is subject to recordkeeping and monitoring requirements, but is exempt from the RCRA Subpart CC and benzene Subpart FF air emission control requirements. Under Subpart CC, a tank in which the entering material has an average VOC concentration less than 500 mg/L (i.e., < 500 parts per million by weight or ppmw) is exempt from the RCRA Subpart CC air emission control requirements (40 CFR 265.1082(c)). In accordance with this program, annual monitoring of the material in tank T-11 is conducted and has indicated that the average VOC concentration in the water is less than 500 mg/L. Tank T-11 water is also monitored for benzene annually and has to date been found to contain less than 10 mg/L benzene, the trigger level at which USEPA's Subpart FF benzene NESHAP air emission requirements would be needed.

Process equipment (e.g., piping, valves, flanges, hatches, etc.) is also regularly monitored and inspected to minimize potential fugitive emissions in accordance with the facility's RCRA compliance program and the benzene NESHAP Subpart FF requirements. Annual air monitoring, in accordance with Subpart FF, is conducted to measure any VOC emissions from tanks, the furnace feed hopper, carbon adsorbers, piping, and other equipment involved in the handling of spent carbon. The Westates monitoring program examines more than 80 potential emission locations at the facility (e.g., flanges, equipment doors, valves, carbon adsorber outlets, etc.). An instrument reading, using USEPA's Method 21, of more than 500 parts per million by volume (ppmv) in air above background is used as a trigger under Subpart FF indicating unacceptable VOC emissions. Measurements made on process equipment (e.g., piping, valves, flanges, hatches, etc.) have exceeded the 500 ppmw trigger only once from 1995 through 2001 (the hatch of recycle water tank T-9 had been left ajar).[2] In this instance, the hatch was immediately closed. Other than this instance, the measured VOC concentrations at process equipment potential emission locations using Method 21 have typically been no more than 1-10 ppmv above background levels.

Visual inspections of facility equipment and processes also occur on a daily, weekly, quarterly and bi-annual basis. The inspection forms used by Westates to conduct these inspections are included in Appendix D. On a daily basis, for example, all drums, vessels and bags are checked for leaks, corrosion, and complete closure and the storage tank systems are checked to ensure that there are no valve leaks, no cracks in piping, no corrosion, that overfill protection systems are functioning and that all monitoring equipment is functioning. Dust collection systems are checked weekly for leaks and to assure adequate pressure drop. A detailed inspection of all seals, inlets and outlets of pumps and valves is performed on a monthly basis. Visual inspections are also conducted to search for cracks, holes, loose connections or gaps in all fixed-roofs, seals, access doors, ductwork, piping, connections and all other openings of equipment used to manage spent carbon. These openings are required to be maintained in a closed, sealed position at all times when spent carbon is present except when it is necessary to use the opening for sampling or removal, or for equipment inspection, maintenance or repair.

4.3.1.4 Spent Carbon Reactivation

Potential emissions associated with spent carbon reactivation are routed through the facility's air pollution control (APC) equipment and then discharged through the facility stack. The high temperature reactivation process and APC employed at the facility are extremely effective in minimizing and removing potential pollutants from the exhaust stack gases. As noted in Section 4.2, potential risks associated with stack emissions will be considered in the risk assessment. Fugitive emissions from the reactivation furnace are, however, prevented by the design of the process which utilizes a totally sealed system. Facility inspection procedures also ensure the integrity of the equipment.

4.3.1.5 Production and Bagging of Reactivated Carbon

Potential fugitive dusts associated with production and bagging of reactivated carbon are controlled through the use of an exhaust system which draws air from the product piping and bagging equipment to the product-side baghouse (BH-1). Not only are product bags connected

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[2] VOC concentrations greater than 500 ppmw have been observed using the Method 21 sampling not for process equipment but rather in the immediate vicinity of spent carbon barrels at the moment they are opened for unloading and during unloading.

with tight seals to the bagging equipment while filling, but the piping inserted into bags being filled exhausts air to baghouse BH-1. Almost the entire reactivated carbon product consists of small pellets or granules. Based on data from January 2000 to October 2001, only 3.7% of the reactivated product was screened into the smallest "fines" category (i.e., close to powdered activated carbon). Of this percentage, approximately 88% is fed directly to bagging equipment with the remainder (powdered activated carbon) collected in the product-side baghouse fabric filters. The baghouse is shaken periodically, and then a rotary valve scrapes the product directly from the filters into supersacks that are tightly sealed onto the base of the baghouse. When full, the supersacks are manually closed and sealed. This process produces roughly one bag of fine powdered activated carbon per week. The reactivated carbon product is no longer subject to RCRA regulations.

4.3.1.6 Potential Fugitive Emissions from Other Sources

All spent carbon received at the facility is maintained inside sealed containers which are regularly inspected until they are unloaded. Spent carbon is never stored in storage piles anywhere at the facility. The only time spent carbon is ever exposed to the ambient air is during unloading. Once unloaded into the hoppers, all spent carbon is maintained in a slurry form (roughly 44% water) and is enclosed in process equipment (e.g., storage tanks) until it is sent to the combustion system.

All roads used by vehicles transporting spent carbon and reactivated carbon at the facility are paved, thereby minimizing potential fugitive dust emissions. Since spent carbon remains containerized until unloading, fugitive dust emissions that could potentially occur from vehicle movement would only contain native soils, not spent carbon. In addition, the length of paved road segments used by vehicles at the facility is very limited (no more than about 1/4 mile) and vehicle speeds are kept very slow at all times on facility roads (typically less than 5 miles per hour). These factors all limit the likelihood of fugitive dust emissions of soil due to vehicular traffic at the facility. Vehicles carrying spent carbon occasionally wait on the shoulder of the paved facility driveway for their turn to unload their spent carbon; in this case, the vehicle will be at a standstill except when pulling off or on the pavement. The potential for fugitive dust emissions of soil from non-paved surfaces is, therefore, negligible due to the infrequent need for vehicles to pull over while waiting their turn coupled with the fact that the vehicles on the driveway shoulder are not moving except when pulling off or on the paved surface.

4.3.2 Exposure Assessment for Fugitive Emissions

4.3.2.1 Potential Fugitive Emission Sources Selected for Evaluation

The requirements of the benzene Subpart FF regulations minimize potential fugitive volatile organic emissions associated with spent carbon containers and spent carbon storage and process equipment. The combustion process effectively destroys VOCs on spent carbon, thus fugitive VOC emissions will not occur during production and bagging of reactivated carbon. Spent carbon is only exposed to the ambient air during unloading, and there is thus some potential for fugitive VOC emissions during this activity. The potential impact of fugitive VOC emissions in outdoor ambient air will be lower for unloading activities at the indoor hopper compared to the outdoor hopper because the indoor environment will hinder release and dispersion of potential VOC emissions into the outdoor environment.

Fugitive dust emissions associated with spent carbon may occur during unloading of dry spent carbon at the hoppers. Fugitive dust emissions associated with reactivated carbon could potentially occur during production and bagging activities. At all other points in the facility's process, spent carbon and reactivated carbon are maintained in enclosed systems with no contact with the ambient air. Also, after unloading until combustion, all spent carbon is maintained in a slurry form and will not generate fugitive dusts. There is, however, a potential for spent carbon fugitive dust emissions to occur during unloading of dry spent carbon at the two hoppers even though these emissions are reduced through the use of an exhaust system at the hoppers as well as through the use of a water spray during unloading. Fugitive dust emissions during production and bagging of reactivated carbon are minimized by routing all product through a well-controlled piping and bagging system equipped with highly localized air emission controls at the point of potential dust generation. Thus, fugitive dust emissions associated with reactivated carbon are likely to be negligible.

Based on the discussion provided above, the potential fugitive emission source related to spent carbon considered most likely to impact ambient air is the unloading of spent carbon at the outdoor hopper. Thus, this fugitive emission source will be addressed in the risk assessment, focusing on both fugitive dust emissions as well as fugitive VOC emissions.

ATTACHMENT D

STACK EMISSIONS RISK ASSESSMENT:
ACUTE INHALATION RISK RESULTS
USING MAXIMUM MEASURED STACK EMISSION RATES

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
A_1 max hourly impact point (stack)	
Arsenic	8.2E-02
Nitrogen dioxide	3.9E-02
Sulfur dioxide	1.4E-02
Chlorine	8.9E-03
Hydrogen chloride	4.0E-03
Beryllium	3.1E-03
Cadmium	1.3E-03
Nickel	2.7E-04
Lead	2.6E-04
Copper	2.2E-04
Mercury	3.9E-05
Hexachlorobenzene	9.9E-06
Mercuric chloride	9.7E-06
Chlorophenyl-phenylether, 4-	8.9E-06
Chloroform (Trichloromethane)	6.6E-06
Benzidine	6.0E-06
Dibromo-3-chloropropane, 1,2-	5.1E-06
Thallium (I)	4.7E-06
Manganese	3.0E-06
Vanadium	2.7E-06
Hexachlorocyclopentadiene	2.2E-06
Silver	1.9E-06
4,6-Dinitro-2-methylphenol	1.3E-06
Zinc	9.8E-07
Barium	9.1E-07
Pentachlorophenol	6.1E-07
Aluminum	5.9E-07
Tetrachloroethylene (Perchloroethylene)	5.7E-07
Chromium	5.2E-07
Chromium, hexavalent	5.2E-07
Selenium	4.1E-07
Fluoranthene	3.5E-07
PentaCDF, 2,3,4,7,8-	3.3E-07
Nitrosodipropylamine, n-	2.9E-07
Antimony	1.7E-07
Bromoform (tribromomethane)	1.7E-07
Chlorobenzene	1.6E-07
Benzoic Acid	1.3E-07
Dinitrotoluene, 2,4-	1.3E-07
Benzene	1.2E-07
Methylene chloride	1.2E-07
3-Penten-2-one, 4-methyl	1.1E-07
Bromodichloromethane	1.1E-07
Ethylhexyl phthalate, bis-2-	1.1E-07
Dinitrotoluene, 2,6-	1.1E-07
Dibromochloromethane	1.0E-07
Methyl bromide (Bromomethane)	8.5E-08
Dinitrophenol, 2,4-	7.2E-08
Nitrophenol, 4-	6.9E-08
Nitroaniline, 3-	6.9E-08
Chloronaphthalene,2-	6.6E-08
Dichlorobenzidine, 3,3'-	5.1E-08
Methylene bromide	5.1E-08
Pentachloronitrobenzene (PCNB)	4.2E-08
Toluene	4.2E-08
Cobalt	3.9E-08
Chlorobenzilate	3.2E-08
Dimethylphenol, 2,4-	3.0E-08
Acrylonitrile	3.0E-08
Nitrophenol, 2-	2.6E-08
Heptachlor	2.4E-08
Carbon Tetrachloride	2.4E-08
Carbazole	2.3E-08
Benzaldehyde	2.3E-08
Dinitrobenzene, 1,3-	2.2E-08
Methyl ethyl ketone (2-Butanone'	2.1E-08
Benzyl alcohol	2.1E-08
Phenanthrene	1.6E-08
Nitroaniline, 4-	1.5E-08
Benzonitrile	1.5E-08
Di-n-butyl phthalate	1.5E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Aniline	1.4E-08
Carbon Disulfide	1.4E-08
Methyl chloride (Chloromethane)	1.3E-08
Heptachlor epoxide	1.3E-08
Phenol	1.2E-08
TetraCDF, 2,3,7,8-	1.1E-08
Endrin	9.5E-09
Chlorophenol, 2-	8.5E-09
Chloroaniline, p-	8.3E-09
Trichlorobenzene, 1,2,3-	6.8E-09
Acetone	6.8E-09
Bromophenyl-phenylether, 4-	6.7E-09
Chloro-3-methylphenol, 4-	6.5E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	6.3E-09
Naphthalene	6.3E-09
Acetophenone	6.3E-09
HexaCDF, 1,2,3,6,7,8-	6.2E-09
Cresol, o-	6.2E-09
HexaCDF, 2,3,4,6,7,8-	5.8E-09
N-nitrosodimethylamine	5.5E-09
Butylbenzylphthalate	4.4E-09
Chlordane	4.3E-09
Dichlorobenzene, 1,3-	4.2E-09
2,5-Dimethylheptane	4.1E-09
Diethyl phthalate	4.0E-09
Acenaphthylene	4.0E-09
Tetrachloroethane, 1,1,2,2-	3.9E-09
Vinyl Acetate	3.8E-09
HexaCDF, 1,2,3,4,7,8-	3.8E-09
HexaCDD, 1,2,3,4,7,8-	3.6E-09
Dichloropropene, 1,3- (cis)	3.5E-09
Xylene, p-	3.4E-09
Xylene, m-	3.4E-09
Bis(2-chloroethoxy) methane	3.3E-09
Trichlorophenol, 2,4,5-	3.2E-09
PentaCDF, 1,2,3,7,8-	3.2E-09
Nitroaniline, 2-	3.1E-09
Nitrobenzene	3.1E-09
Dichlorophenol, 2,4-	2.9E-09
Benzo(b)fluoranthene	2.9E-09
2-Hexanone	2.8E-09
Hexachloroethane (Perchloroethane)	2.8E-09
Cresol, p-	2.7E-09
Cresol, m-	2.7E-09
Dimethyl phthalate	2.7E-09
PentaCDD, 1,2,3,7,8-	2.6E-09
Endosulfan I	2.6E-09
Trichlorophenol, 2,4,6-	2.5E-09
BHC, beta-	2.4E-09
Pyridine	2.2E-09
Dibenzofuran	2.1E-09
Diphenylamine	2.1E-09
Bromobenzene	2.0E-09
Indeno(1,2,3-cd) pyrene	1.9E-09
Tetrachlorobenzene, 1,2,4,5-	1.9E-09
Aldrin	1.9E-09
Nitrosodiphenylamine, N-	1.9E-09
Isophorone	1.9E-09
Pentachlorobenzene	1.8E-09
Di-n-octylphthalate	1.7E-09
Trichlorobenzene, 1,2,4-	1.6E-09
TetraCDD, 2,3,7,8-	1.6E-09
Chrysene	1.5E-09
Aroclor 1254	1.4E-09
Diphenylhydrazine,1,2-	1.4E-09
3-Ethyl benzaldehyde	1.3E-09
4-Ethyl benzaldehyde	1.3E-09
Trichloropropane, 1,2,3-	1.2E-09
DDT, 4-4'-	1.2E-09
Butylbenzene, sec	1.2E-09
Xylene, o-	1.2E-09
1,1-Dichloropropene	1.0E-09
Trichloroethane, 1,1,2-	9.5E-10
Dieldrin	9.2E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
BHC, alpha-	9.0E-10
Benzo(a)Anthracene	8.7E-10
Styrene	8.1E-10
Bis(2-chlorethyl)ether	8.1E-10
Benzo(k)fluoranthene	7.8E-10
2,2'-oxybis (1-Chloropropane)	7.7E-10
Iodomethane	7.2E-10
Methyl isobutyl ketone	5.6E-10
Benzo(a)pyrene	5.0E-10
gamma-BHC (Lindane)	4.6E-10
OctaCDF, 1,2,3,4,6,7,8,9-	4.4E-10
Ethylene dibromide	3.9E-10
Trichloroethylene	3.6E-10
Tetrahydrofuran	3.6E-10
Pyrene	3.5E-10
HexaCDD, 1,2,3,7,8,9-	3.5E-10
DDD, 4,4'-	3.5E-10
Tetrachloroethane, 1,1,1,2-	3.1E-10
HexaCDD, 1,2,3,6,7,8-	3.0E-10
1,3-Dichloropropane	3.0E-10
Butylbenzene, n-	2.9E-10
Dichloroethylene 1,1-	2.8E-10
2,2-Dichloropropane	2.8E-10
Butylbenzene, tert	2.7E-10
Vinyl Chloride	2.5E-10
Trichloroethane, 1,1,1-	2.4E-10
Anthracene	2.3E-10
Acenaphthene	2.2E-10
2-Methylnaphthalene	2.1E-10
Trimethylbenzene, 1,3,5-	1.9E-10
Dichlorobenzene, 1,2-	1.7E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	1.6E-10
HeptaCDF, 1,2,3,4,6,7,8-	1.5E-10
Methoxychlor	1.1E-10
Dichlorobenzene,1,4-	1.0E-10
DDE, 4,4'-	9.8E-11
Fluorene	8.6E-11
Cumene (Isopropylbenzene)	8.5E-11
OctaCDD, 1,2,3,4,6,7,8,9-	7.9E-11
2-Chlorotoluene	7.5E-11
4-Chlorotoluene	7.5E-11
Ethylene Glycol	6.5E-11
Propylbenzene, n-	6.2E-11
Trichlorofluoromethane (Freon 11)	5.4E-11
1,2,4-Trimethylbenzene	5.4E-11
Dichloroethylene, cis-1,2-	4.8E-11
Ethylbenzene	4.7E-11
Dichloropropane, 1,2-	4.7E-11
HexaCDF, 1,2,3,7,8,9-	3.3E-11
Chloroethane	3.1E-11
Dichlorodifluoromethane	3.1E-11
Bromochloromethane	3.0E-11
Benzo(g,h,i)perylene	3.0E-11
methyl tert-butyl ether	2.4E-11
HeptaCDF, 1,2,3,4,7,8,9-	2.1E-11
Propylene oxide	1.7E-11
Dichloroethylene-1,2 (trans)	1.5E-11
Dichloroethane 1,1-	1.5E-11
HeptaCDD, 1,2,3,4,6,7,8-	7.7E-12
Methyl methacrylate	4.1E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	2.0E-12
Dibenz(a,h)anthracene	1.9E-12
Dioxane, 1,4-	1.5E-12
Acrylic Acid	1.6E-13
1-Hexane (n-hexane)	2.8E-14
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	1.5E-01
A_2 closest business	
Nitrogen dioxide	3.9E-02
Arsenic	3.3E-02
Sulfur dioxide	1.4E-02
Chlorine	9.0E-03
Hydrogen chloride	4.0E-03
Beryllium	1.3E-03
Cadmium	5.2E-04
Nickel	1.1E-04
Lead	1.0E-04
Copper	9.0E-05
Mercury	3.9E-05
Hexachlorobenzene	9.9E-06
Mercuric chloride	9.7E-06
Chlorophenyl-phenylether, 4-	9.0E-06
Chloroform (Trichloromethane)	6.7E-06
Benzidine	5.8E-06
Dibromo-3-chloropropane, 1,2-	5.2E-06
Hexachlorocyclopentadiene	2.2E-06
Thallium (I)	1.9E-06
4,6-Dinitro-2-methylphenol	1.3E-06
Manganese	1.2E-06
Vanadium	1.1E-06
Silver	7.7E-07
Pentachlorophenol	6.1E-07
Tetrachloroethylene (Perchloroethylene)	5.7E-07
Zinc	3.9E-07
Barium	3.7E-07
Fluoranthene	3.5E-07
PentaCDF, 2,3,4,7,8-	3.2E-07
Nitrosodipropylamine, n-	2.9E-07
Aluminum	2.4E-07
Chromium	2.1E-07
Chromium, hexavalent	2.1E-07
Antimony	1.7E-07
Bromoform (tribromomethane)	1.7E-07
Selenium	1.6E-07
Chlorobenzene	1.6E-07
Benzoic Acid	1.3E-07
Dinitrotoluene, 2,4-	1.3E-07
Benzene	1.2E-07
Methylene chloride	1.2E-07
3-Penten-2-one, 4-methyl	1.1E-07
Bromodichloromethane	1.1E-07
Ethylhexyl phthalate, bis-2-	1.1E-07
Dinitrotoluene, 2,6-	1.1E-07
Dibromochloromethane	1.0E-07
Methyl bromide (Bromomethane)	8.6E-08
Dinitrophenol, 2,4-	7.3E-08
Nitrophenol, 4-	7.0E-08
Nitroaniline, 3-	7.0E-08
Chloronaphthalene,2-	6.6E-08
Methylene bromide	5.1E-08
Dichlorobenzidine, 3,3'-	5.1E-08
Pentachloronitrobenzene (PCNB)	4.2E-08
Toluene	4.2E-08
Chlorobenzilate	3.2E-08
Dimethylphenol, 2,4-	3.1E-08
Acrylonitrile	3.0E-08
Nitrophenol, 2-	2.6E-08
Heptachlor	2.4E-08
Carbon Tetrachloride	2.4E-08
Carbazole	2.3E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Benzaldehyde	2.3E-08
Dinitrobenzene, 1,3-	2.2E-08
Methyl ethyl ketone (2-Butanone)	2.1E-08
Benzyl alcohol	2.1E-08
Phenanthrene	1.6E-08
Cobalt	1.6E-08
Nitroaniline, 4-	1.5E-08
Benzonitrile	1.5E-08
Di-n-butyl phthalate	1.5E-08
Aniline	1.4E-08
Carbon Disulfide	1.4E-08
Methyl chloride (Chloromethane)	1.3E-08
Heptachlor epoxide	1.3E-08
Phenol	1.2E-08
TetraCDF, 2,3,7,8-	1.1E-08
Endrin	9.5E-09
Chlorophenol, 2-	8.6E-09
Chloroaniline, p-	8.3E-09
Trichlorobenzene, 1,2,3-	6.9E-09
Acetone	6.8E-09
Bromophenyl-phenylether, 4-	6.7E-09
Chloro-3-methylphenol, 4-	6.6E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	6.4E-09
Naphthalene	6.4E-09
Acetophenone	6.3E-09
Cresol, o-	6.2E-09
HexaCDF, 1,2,3,6,7,8-	6.0E-09
HexaCDF, 2,3,4,6,7,8-	5.7E-09
N-nitrosodimethylamine	5.5E-09
Butylbenzylphthalate	4.4E-09
Chlordane	4.3E-09
Dichlorobenzene, 1,3-	4.2E-09
2,5-Dimethylheptane	4.1E-09
Diethyl phthalate	4.0E-09
Acenaphthylene	4.0E-09
Tetrachloroethane, 1,1,2,2-	3.9E-09
Vinyl Acetate	3.9E-09
HexaCDF, 1,2,3,4,7,8-	3.7E-09
Dichloropropene, 1,3- (cis)	3.5E-09
HexaCDD, 1,2,3,4,7,8-	3.5E-09
Xylene, p-	3.4E-09
Xylene, m-	3.4E-09
Bis(2-chloroethoxy) methane	3.3E-09
Trichlorophenol, 2,4,5-	3.2E-09
Nitroaniline, 2-	3.2E-09
Nitrobenzene	3.1E-09
PentaCDF, 1,2,3,7,8-	3.1E-09
Dichlorophenol, 2,4-	2.9E-09
Benzo(b)fluoranthene	2.9E-09
2-Hexanone	2.8E-09
Hexachloroethane (Perchloroethane)	2.8E-09
Cresol, p-	2.7E-09
Cresol, m-	2.7E-09
Dimethyl phthalate	2.7E-09
Endosulfan I	2.6E-09
Trichlorophenol, 2,4,6-	2.6E-09
PentaCDD, 1,2,3,7,8-	2.5E-09
BHC, beta-	2.4E-09
Pyridine	2.2E-09
Dibenzofuran	2.1E-09
Diphenylamine	2.1E-09
Bromobenzene	2.0E-09
Tetrachlorobenzene, 1,2,4,5-	1.9E-09
Aldrin	1.9E-09
Nitrosodiphenylamine, N-	1.9E-09
Isophorone	1.9E-09
Pentachlorobenzene	1.8E-09
Di-n-octylphthalate	1.7E-09
Trichlorobenzene, 1,2,4-	1.6E-09
TetraCDD, 2,3,7,8-	1.5E-09
Chrysene	1.5E-09
Aroclor 1254	1.5E-09
Diphenylhydrazine,1,2-	1.4E-09
3-Ethyl benzaldehyde	1.4E-09

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
4-Ethyl benzaldehyde	1.4E-09
Trichloropropane, 1,2,3-	1.2E-09
DDT, 4-4'-	1.2E-09
Butylbenzene, sec	1.2E-09
Xylene, o-	1.2E-09
1,1-Dichloropropene	1.0E-09
Trichloroethane, 1,1,2-	9.6E-10
Dieldrin	9.2E-10
BHC, alpha-	9.0E-10
Benzo(a)Anthracene	8.6E-10
Styrene	8.2E-10
Bis(2-chlorethyl)ether	8.1E-10
2,2'-oxybis (1-Chloropropane)	7.7E-10
Indeno(1,2,3-cd) pyrene	7.7E-10
Benzo(k)fluoranthene	7.6E-10
Iodomethane	7.2E-10
Methyl isobutyl ketone	5.6E-10
Benzo(a)pyrene	4.9E-10
gamma-BHC (Lindane)	4.6E-10
OctaCDF, 1,2,3,4,6,7,8,9-	4.2E-10
Ethylene dibromide	3.9E-10
Trichloroethylene	3.6E-10
Tetrahydrofuran	3.6E-10
Pyrene	3.6E-10
DDD, 4,4'-	3.5E-10
HexaCDD, 1,2,3,7,8,9-	3.4E-10
Tetrachloroethane, 1,1,1,2-	3.2E-10
1,3-Dichloropropane	3.0E-10
HexaCDD, 1,2,3,6,7,8-	2.9E-10
Butylbenzene, n-	2.9E-10
Dichloroethylene 1,1-	2.8E-10
2,2-Dichloropropane	2.8E-10
Butylbenzene, tert	2.8E-10
Vinyl Chloride	2.6E-10
Trichloroethane, 1,1,1-	2.4E-10
Anthracene	2.3E-10
Acenaphthene	2.2E-10
2-Methylnaphthalene	2.1E-10
Trimethylbenzene, 1,3,5-	1.9E-10
Dichlorobenzene, 1,2-	1.7E-10
Dichloroethane, 1,2- (Ethylene Dichloride)	1.6E-10
HeptaCDF, 1,2,3,4,6,7,8-	1.5E-10
Methoxychlor	1.1E-10
Dichlorobenzene,1,4-	1.0E-10
DDE, 4,4'-	9.8E-11
Fluorene	8.7E-11
Cumene (Isopropylbenzene)	8.5E-11
OctaCDD, 1,2,3,4,6,7,8,9-	7.7E-11
2-Chlorotoluene	7.5E-11
4-Chlorotoluene	7.5E-11
Ethylene Glycol	6.5E-11
Propylbenzene, n-	6.2E-11
Trichlorofluoromethane (Freon 11)	5.5E-11
1,2,4-Trimethylbenzene	5.4E-11
Dichloroethylene, cis-1,2-	4.9E-11
Ethylbenzene	4.7E-11
Dichloropropane, 1,2-	4.7E-11
HexaCDF, 1,2,3,7,8,9-	3.2E-11
Chloroethane	3.1E-11
Dichlorodifluoromethane	3.1E-11
Bromochloromethane	3.0E-11
Benzo(g,h,i)perylene	2.9E-11
methyl tert-butyl ether	2.4E-11
HeptaCDF, 1,2,3,4,7,8,9-	2.1E-11
Propylene oxide	1.7E-11
Dichloroethylene-1,2 (trans)	1.5E-11
Dichloroethane 1,1-	1.5E-11
HeptaCDD, 1,2,3,4,6,7,8-	7.5E-12
Methyl methacrylate	4.1E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	2.0E-12
Dioxane, 1,4-	1.6E-12
Dibenz(a,h)anthracene	8.0E-13
Acrylic Acid	1.6E-13
1-Hexane (n-hexane)	2.8E-14

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	1.0E-01
R_1 resident	
Nitrogen dioxide	1.6E-02
Arsenic	1.2E-02
Sulfur dioxide	5.8E-03
Chlorine	3.7E-03
Hydrogen chloride	1.6E-03
Beryllium	4.5E-04
Cadmium	1.8E-04
Nickel	3.8E-05
Lead	3.7E-05
Copper	3.2E-05
Mercury	1.6E-05
Hexachlorobenzene	4.0E-06
Mercuric chloride	4.0E-06
Chlorophenyl-phenylether, 4-	3.7E-06
Chloroform (Trichloromethane)	2.7E-06
Benzidine	2.6E-06
Dibromo-3-chloropropane, 1,2-	2.1E-06
Hexachlorocyclopentadiene	9.1E-07
Thallium (I)	6.7E-07
4,6-Dinitro-2-methylphenol	5.3E-07
Manganese	4.2E-07
Vanadium	3.8E-07
Silver	2.7E-07
Pentachlorophenol	2.5E-07
Tetrachloroethylene (Perchloroethylene)	2.3E-07
Fluoranthene	1.4E-07
PentaCDF, 2,3,4,7,8-	1.4E-07
Zinc	1.4E-07
Barium	1.3E-07
Nitrosodipropylamine, n-	1.2E-07
Aluminum	8.4E-08
Chromium	7.4E-08
Chromium, hexavalent	7.4E-08
Antimony	7.0E-08
Bromoform (tribromomethane)	6.8E-08
Chlorobenzene	6.4E-08
Selenium	5.8E-08
Benzoic Acid	5.4E-08
Dinitrotoluene, 2,4-	5.4E-08
Benzene	4.9E-08
Methylene chloride	4.7E-08
Ethylhexyl phthalate, bis-2-	4.7E-08
3-Penten-2-one, 4-methyl	4.6E-08
Bromodichloromethane	4.5E-08
Dinitrotoluene, 2,6-	4.3E-08
Dibromochloromethane	4.2E-08
Methyl bromide (Bromomethane)	3.5E-08
Dinitrophenol, 2,4-	3.0E-08
Nitrophenol, 4-	2.8E-08
Nitroaniline, 3-	2.8E-08
Chloronaphthalene,2-	2.7E-08
Dichlorobenzidine, 3,3'-	2.2E-08
Methylene bromide	2.1E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Pentachloronitrobenzene (PCNB)	1.7E-08
Toluene	1.7E-08
Chlorobenzilate	1.3E-08
Dimethylphenol, 2,4-	1.2E-08
Acrylonitrile	1.2E-08
Nitrophenol, 2-	1.1E-08
Heptachlor	9.7E-09
Carbon Tetrachloride	9.7E-09
Carbazole	9.5E-09
Benzaldehyde	9.4E-09
Dinitrobenzene, 1,3-	8.9E-09
Methyl ethyl ketone (2-Butanone)	8.4E-09
Benzyl alcohol	8.4E-09
Phenanthrene	6.7E-09
Nitroaniline, 4-	6.1E-09
Benzonitrile	6.1E-09
Di-n-butyl phthalate	6.0E-09
Aniline	5.8E-09
Carbon Disulfide	5.6E-09
Cobalt	5.5E-09
Methyl chloride (Chloromethane)	5.2E-09
Heptachlor epoxide	5.2E-09
Phenol	4.8E-09
TetraCDF, 2,3,7,8-	4.6E-09
Endrin	3.9E-09
Chlorophenol, 2-	3.5E-09
Chloroaniline, p-	3.4E-09
Trichlorobenzene, 1,2,3-	2.8E-09
Acetone	2.8E-09
Bromophenyl-phenylether, 4-	2.7E-09
Chloro-3-methylphenol, 4-	2.7E-09
HexaCDF, 1,2,3,6,7,8-	2.7E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	2.6E-09
Naphthalene	2.6E-09
Acetophenone	2.6E-09
Cresol, o-	2.5E-09
HexaCDF, 2,3,4,6,7,8-	2.5E-09
N-nitrosodimethylamine	2.3E-09
Butylbenzylphthalate	1.8E-09
Chlordane	1.7E-09
Dichlorobenzene, 1,3-	1.7E-09
2,5-Dimethylheptane	1.7E-09
Diethyl phthalate	1.6E-09
HexaCDF, 1,2,3,4,7,8-	1.6E-09
Acenaphthylene	1.6E-09
Tetrachloroethane, 1,1,2,2-	1.6E-09
Vinyl Acetate	1.6E-09
HexaCDD, 1,2,3,4,7,8-	1.5E-09
Dichloropropene, 1,3- (cis)	1.4E-09
Xylene, p-	1.4E-09
Xylene, m-	1.4E-09
Bis(2-chloroethoxy) methane	1.4E-09
PentaCDF, 1,2,3,7,8-	1.3E-09
Trichlorophenol, 2,4,5-	1.3E-09
Nitroaniline, 2-	1.3E-09
Nitrobenzene	1.3E-09
Dichlorophenol, 2,4-	1.2E-09
Benzo(b)fluoranthene	1.2E-09
2-Hexanone	1.1E-09
Hexachloroethane (Perchloroethane)	1.1E-09
PentaCDD, 1,2,3,7,8-	1.1E-09
Cresol, p-	1.1E-09
Cresol, m-	1.1E-09
Dimethyl phthalate	1.1E-09
Endosulfan I	1.1E-09
Trichlorophenol, 2,4,6-	1.0E-09
BHC, beta-	9.6E-10
Pyridine	9.2E-10
Dibenzofuran	8.7E-10
Diphenylamine	8.7E-10
Bromobenzene	8.1E-10
Aldrin	7.9E-10
Tetrachlorobenzene, 1,2,4,5-	7.9E-10
Nitrosodiphenylamine, N-	7.8E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Isophorone	7.8E-10
Pentachlorobenzene	7.3E-10
Di-n-octylphthalate	7.1E-10
TetraCDD, 2,3,7,8-	6.5E-10
Trichlorobenzene, 1,2,4-	6.5E-10
Chrysene	6.3E-10
Aroclor 1254	5.9E-10
Diphenylhydrazine,1,2-	5.7E-10
3-Ethyl benzaldehyde	5.5E-10
4-Ethyl benzaldehyde	5.5E-10
Trichloropropane, 1,2,3-	5.0E-10
DDT, 4-4'-	4.9E-10
Butylbenzene, sec	4.8E-10
Xylene, o-	4.7E-10
1,1-Dichloropropene	4.2E-10
Trichloroethane, 1,1,2-	3.9E-10
Dieldrin	3.8E-10
BHC, alpha-	3.7E-10
Benzo(a)Anthracene	3.7E-10
Styrene	3.3E-10
Benzo(k)fluoranthene	3.3E-10
Bis(2-chlorethyl)ether	3.3E-10
2,2'-oxybis (1-Chloropropane)	3.2E-10
Iodomethane	3.0E-10
Indeno(1,2,3-cd) pyrene	2.7E-10
Methyl isobutyl ketone	2.3E-10
Benzo(a)pyrene	2.1E-10
OctaCDF, 1,2,3,4,6,7,8,9-	1.9E-10
gamma-BHC (Lindane)	1.9E-10
Ethylene dibromide	1.6E-10
HexaCDD, 1,2,3,7,8,9-	1.5E-10
Trichloroethylene	1.5E-10
Tetrahydrofuran	1.5E-10
Pyrene	1.5E-10
DDD, 4,4'-	1.4E-10
HexaCDD, 1,2,3,6,7,8-	1.3E-10
Tetrachloroethane, 1,1,1,2-	1.3E-10
1,3-Dichloropropane	1.2E-10
Butylbenzene, n-	1.2E-10
Dichloroethylene 1,1-	1.1E-10
2,2-Dichloropropane	1.1E-10
Butylbenzene, tert	1.1E-10
Vinyl Chloride	1.0E-10
Trichloroethane, 1,1,1-	9.9E-11
Anthracene	9.3E-11
Acenaphthene	9.0E-11
2-Methylnaphthalene	8.7E-11
Trimethylbenzene, 1,3,5-	7.9E-11
Dichlorobenzene, 1,2-	6.9E-11
Dichloroethane, 1,2- (Ethylene Dichloride)	6.5E-11
HeptaCDF, 1,2,3,4,6,7,8-	6.5E-11
Methoxychlor	4.4E-11
Dichlorobenzene,1,4-	4.1E-11
DDE, 4,4'-	4.0E-11
Fluorene	3.5E-11
Cumene (Isopropylbenzene)	3.5E-11
OctaCDD, 1,2,3,4,6,7,8,9-	3.4E-11
2-Chlorotoluene	3.1E-11
4-Chlorotoluene	3.1E-11
Ethylene Glycol	2.7E-11
Propylbenzene, n-	2.5E-11
Trichlorofluoromethane (Freon 11)	2.2E-11
1,2,4-Trimethylbenzene	2.2E-11
Dichloroethylene, cis-1,2-	2.0E-11
Ethylbenzene	1.9E-11
Dichloropropane, 1,2-	1.9E-11
HexaCDF, 1,2,3,7,8,9-	1.4E-11
Benzo(g,h,i)perylene	1.3E-11
Chloroethane	1.3E-11
Dichlorodifluoromethane	1.3E-11
Bromochloromethane	1.2E-11
methyl tert-butyl ether	9.7E-12
HeptaCDF, 1,2,3,4,7,8,9-	9.2E-12
Propylene oxide	6.9E-12

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Dichloroethylene-1,2 (trans)	6.3E-12
Dichloroethane 1,1-	6.0E-12
HeptaCDD, 1,2,3,4,6,7,8-	3.3E-12
Methyl methacrylate	1.7E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	8.1E-13
Dioxane, 1,4-	6.3E-13
Dibenz(a,h)anthracene	2.9E-13
Acrylic Acid	6.4E-14
1-Hexane (n-hexane)	1.1E-14
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	4.0E-02
R_2 resident	
Nitrogen dioxide	1.1E-02
Arsenic	7.0E-03
Sulfur dioxide	3.9E-03
Chlorine	2.4E-03
Hydrogen chloride	1.1E-03
Beryllium	2.6E-04
Cadmium	1.1E-04
Nickel	2.3E-05
Lead	2.2E-05
Copper	1.9E-05
Mercury	1.1E-05
Hexachlorobenzene	2.7E-06
Mercuric chloride	2.7E-06
Chlorophenyl-phenylether, 4-	2.5E-06
Chloroform (Trichloromethane)	1.8E-06
Benzidine	1.7E-06
Dibromo-3-chloropropane, 1,2-	1.4E-06
Hexachlorocyclopentadiene	6.1E-07
Thallium (I)	4.0E-07
4,6-Dinitro-2-methylphenol	3.5E-07
Manganese	2.5E-07
Vanadium	2.3E-07
Pentachlorophenol	1.7E-07
Silver	1.6E-07
Tetrachloroethylene (Perchloroethylene)	1.6E-07
Fluoranthene	9.5E-08
PentaCDF, 2,3,4,7,8-	9.5E-08
Zinc	8.3E-08
Nitrosodipropylamine, n-	7.8E-08
Barium	7.7E-08
Aluminum	5.0E-08
Antimony	4.7E-08
Bromoform (tribromomethane)	4.6E-08
Chromium	4.4E-08
Chromium, hexavalent	4.4E-08
Chlorobenzene	4.3E-08
Benzoic Acid	3.6E-08
Dinitrotoluene, 2,4-	3.6E-08
Selenium	3.5E-08
Benzene	3.3E-08
Ethylhexyl phthalate, bis-2-	3.2E-08
Methylene chloride	3.2E-08
3-Penten-2-one, 4-methyl	3.1E-08
Bromodichloromethane	3.0E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Dinitrotoluene, 2,6-	2.9E-08
Dibromochloromethane	2.8E-08
Methyl bromide (Bromomethane)	2.3E-08
Dinitrophenol, 2,4-	2.0E-08
Nitrophenol, 4-	1.9E-08
Nitroaniline, 3-	1.9E-08
Chloronaphthalene,2-	1.8E-08
Dichlorobenzidine, 3,3'-	1.5E-08
Methylene bromide	1.4E-08
Pentachloronitrobenzene (PCNB)	1.1E-08
Toluene	1.1E-08
Chlorobenzilate	9.0E-09
Dimethylphenol, 2,4-	8.3E-09
Acrylonitrile	8.1E-09
Nitrophenol, 2-	7.2E-09
Heptachlor	6.5E-09
Carbon Tetrachloride	6.5E-09
Carbazole	6.4E-09
Benzaldehyde	6.3E-09
Dinitrobenzene, 1,3-	6.0E-09
Methyl ethyl ketone (2-Butanone`	5.6E-09
Benzyl alcohol	5.6E-09
Phenanthrene	4.5E-09
Nitroaniline, 4-	4.1E-09
Benzonitrile	4.1E-09
Di-n-butyl phthalate	4.0E-09
Aniline	3.9E-09
Carbon Disulfide	3.7E-09
Methyl chloride (Chloromethane)	3.5E-09
Heptachlor epoxide	3.5E-09
Cobalt	3.3E-09
Phenol	3.2E-09
TetraCDF, 2,3,7,8-	3.1E-09
Endrin	2.6E-09
Chlorophenol, 2-	2.3E-09
Chloroaniline, p-	2.3E-09
Trichlorobenzene, 1,2,3-	1.9E-09
Acetone	1.9E-09
Bromophenyl-phenylether, 4-	1.8E-09
HexaCDF, 1,2,3,6,7,8-	1.8E-09
Chloro-3-methylphenol, 4-	1.8E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	1.7E-09
Naphthalene	1.7E-09
Acetophenone	1.7E-09
Cresol, o-	1.7E-09
HexaCDF, 2,3,4,6,7,8-	1.7E-09
N-nitrosodimethylamine	1.5E-09
Butylbenzylphthalate	1.2E-09
Chlordane	1.2E-09
Dichlorobenzene, 1,3-	1.2E-09
2,5-Dimethylheptane	1.1E-09
HexaCDF, 1,2,3,4,7,8-	1.1E-09
Diethyl phthalate	1.1E-09
Acenaphthylene	1.1E-09
Tetrachloroethane, 1,1,2,2-	1.1E-09
Vinyl Acetate	1.1E-09
HexaCDD, 1,2,3,4,7,8-	1.0E-09
Dichloropropene, 1,3- (cis)	9.6E-10
Xylene, p-	9.3E-10
Xylene, m-	9.3E-10
PentaCDF, 1,2,3,7,8-	9.1E-10
Bis(2-chloroethoxy) methane	9.1E-10
Trichlorophenol, 2,4,5-	8.8E-10
Nitroaniline, 2-	8.6E-10
Nitrobenzene	8.6E-10
Dichlorophenol, 2,4-	8.0E-10
Benzo(b)fluoranthene	7.8E-10
2-Hexanone	7.6E-10
Hexachloroethane (Perchloroethane)	7.6E-10
PentaCDD, 1,2,3,7,8-	7.5E-10
Cresol, p-	7.4E-10
Cresol, m-	7.4E-10
Dimethyl phthalate	7.3E-10
Endosulfan I	7.0E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Trichlorophenol, 2,4,6-	7.0E-10
BHC, beta-	6.5E-10
Pyridine	6.1E-10
Dibenzofuran	5.8E-10
Diphenylamine	5.8E-10
Bromobenzene	5.4E-10
Aldrin	5.3E-10
Tetrachlorobenzene, 1,2,4,5-	5.3E-10
Nitrosodiphenylamine, N-	5.2E-10
Isophorone	5.2E-10
Pentachlorobenzene	4.9E-10
Di-n-octylphthalate	4.8E-10
TetraCDD, 2,3,7,8-	4.4E-10
Trichlorobenzene, 1,2,4-	4.3E-10
Chrysene	4.3E-10
Aroclor 1254	4.0E-10
Diphenylhydrazine,1,2-	3.8E-10
3-Ethyl benzaldehyde	3.7E-10
4-Ethyl benzaldehyde	3.7E-10
Trichloropropane, 1,2,3-	3.4E-10
DDT, 4-4'-	3.3E-10
Butylbenzene, sec	3.2E-10
Xylene, o-	3.2E-10
1,1-Dichloropropene	2.8E-10
Trichloroethane, 1,1,2-	2.6E-10
Dieldrin	2.5E-10
Benzo(a)Anthracene	2.5E-10
BHC, alpha-	2.5E-10
Benzo(k)fluoranthene	2.2E-10
Styrene	2.2E-10
Bis(2-chlorethyl)ether	2.2E-10
2,2'-oxybis (1-Chloropropane)	2.1E-10
Iodomethane	2.0E-10
Indeno(1,2,3-cd) pyrene	1.6E-10
Methyl isobutyl ketone	1.5E-10
Benzo(a)pyrene	1.4E-10
OctaCDF, 1,2,3,4,6,7,8,9-	1.3E-10
gamma-BHC (Lindane)	1.3E-10
Ethylene dibromide	1.1E-10
HexaCDD, 1,2,3,7,8,9-	1.0E-10
Trichloroethylene	9.9E-11
Tetrahydrofuran	9.9E-11
Pyrene	9.7E-11
DDD, 4,4'-	9.7E-11
HexaCDD, 1,2,3,6,7,8-	8.8E-11
Tetrachloroethane, 1,1,1,2-	8.6E-11
1,3-Dichloropropane	8.2E-11
Butylbenzene, n-	7.9E-11
Dichloroethylene 1,1-	7.6E-11
2,2-Dichloropropane	7.6E-11
Butylbenzene, tert	7.5E-11
Vinyl Chloride	7.0E-11
Trichloroethane, 1,1,1-	6.6E-11
Anthracene	6.2E-11
Acenaphthene	6.0E-11
2-Methylnaphthalene	5.8E-11
Trimethylbenzene, 1,3,5-	5.3E-11
Dichlorobenzene, 1,2-	4.6E-11
HeptaCDF, 1,2,3,4,6,7,8-	4.4E-11
Dichloroethane, 1,2- (Ethylene Dichloride)	4.3E-11
Methoxychlor	3.0E-11
Dichlorobenzene,1,4-	2.8E-11
DDE, 4,4'-	2.7E-11
Fluorene	2.4E-11
Cumene (Isopropylbenzene)	2.3E-11
OctaCDD, 1,2,3,4,6,7,8,9-	2.3E-11
2-Chlorotoluene	2.1E-11
4-Chlorotoluene	2.0E-11
Ethylene Glycol	1.8E-11
Propylbenzene, n-	1.7E-11
Trichlorofluoromethane (Freon 11)	1.5E-11
1,2,4-Trimethylbenzene	1.5E-11
Dichloroethylene, cis-1,2-	1.3E-11
Ethylbenzene	1.3E-11

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Dichloropropane, 1,2-	1.3E-11
HexaCDF, 1,2,3,7,8,9-	9.6E-12
Benzo(g,h,i)perylene	8.8E-12
Chloroethane	8.6E-12
Dichlorodifluoromethane	8.4E-12
Bromochloromethane	8.3E-12
methyl tert-butyl ether	6.5E-12
HeptaCDF, 1,2,3,4,7,8,9-	6.2E-12
Propylene oxide	4.6E-12
Dichloroethylene-1,2 (trans)	4.2E-12
Dichloroethane 1,1-	4.0E-12
HeptaCDD, 1,2,3,4,6,7,8-	2.3E-12
Methyl methacrylate	1.1E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	5.4E-13
Dioxane, 1,4-	4.2E-13
Dibenz(a,h)anthracene	1.7E-13
Acrylic Acid	4.3E-14
1-Hexane (n-hexane)	7.6E-15
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	2.6E-02
R_3 resident farmer	
Nitrogen dioxide	1.0E-02
Arsenic	6.6E-03
Sulfur dioxide	3.6E-03
Chlorine	2.3E-03
Hydrogen chloride	1.0E-03
Beryllium	2.5E-04
Cadmium	1.0E-04
Nickel	2.1E-05
Lead	2.1E-05
Copper	1.8E-05
Mercury	1.0E-05
Hexachlorobenzene	2.6E-06
Mercuric chloride	2.5E-06
Chlorophenyl-phenylether, 4-	2.3E-06
Chloroform (Trichloromethane)	1.7E-06
Benzidine	1.7E-06
Dibromo-3-chloropropane, 1,2-	1.3E-06
Hexachlorocyclopentadiene	5.8E-07
Thallium (I)	3.8E-07
4,6-Dinitro-2-methylphenol	3.3E-07
Manganese	2.4E-07
Vanadium	2.1E-07
Pentachlorophenol	1.6E-07
Silver	1.5E-07
Tetrachloroethylene (Perchloroethylene)	1.5E-07
PentaCDF, 2,3,4,7,8-	9.1E-08
Fluoranthene	9.0E-08
Zinc	7.8E-08
Nitrosodipropylamine, n-	7.4E-08
Barium	7.3E-08
Aluminum	4.7E-08
Antimony	4.4E-08
Bromoform (tribromomethane)	4.3E-08
Chromium	4.2E-08
Chromium, hexavalent	4.2E-08

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Chlorobenzene	4.0E-08
Benzoic Acid	3.4E-08
Dinitrotoluene, 2,4-	3.4E-08
Selenium	3.3E-08
Benzene	3.1E-08
Ethylhexyl phthalate, bis-2-	3.0E-08
Methylene chloride	3.0E-08
3-Penten-2-one, 4-methyl	2.9E-08
Bromodichloromethane	2.9E-08
Dinitrotoluene, 2,6-	2.7E-08
Dibromochloromethane	2.7E-08
Methyl bromide (Bromomethane)	2.2E-08
Dinitrophenol, 2,4-	1.9E-08
Nitrophenol, 4-	1.8E-08
Nitroaniline, 3-	1.8E-08
Chloronaphthalene,2-	1.7E-08
Dichlorobenzidine, 3,3'-	1.4E-08
Methylene bromide	1.3E-08
Pentachloronitrobenzene (PCNB)	1.1E-08
Toluene	1.1E-08
Chlorobenzilate	8.5E-09
Dimethylphenol, 2,4-	7.8E-09
Acrylonitrile	7.6E-09
Nitrophenol, 2-	6.7E-09
Heptachlor	6.1E-09
Carbon Tetrachloride	6.1E-09
Carbazole	6.0E-09
Benzaldehyde	5.9E-09
Dinitrobenzene, 1,3-	5.6E-09
Methyl ethyl ketone (2-Butanone`	5.3E-09
Benzyl alcohol	5.3E-09
Phenanthrene	4.2E-09
Nitroaniline, 4-	3.8E-09
Benzonitrile	3.8E-09
Di-n-butyl phthalate	3.8E-09
Aniline	3.7E-09
Carbon Disulfide	3.5E-09
Methyl chloride (Chloromethane)	3.3E-09
Heptachlor epoxide	3.3E-09
Cobalt	3.1E-09
Phenol	3.1E-09
TetraCDF, 2,3,7,8-	2.9E-09
Endrin	2.5E-09
Chlorophenol, 2-	2.2E-09
Chloroaniline, p-	2.1E-09
Trichlorobenzene, 1,2,3-	1.8E-09
Acetone	1.8E-09
HexaCDF, 1,2,3,6,7,8-	1.7E-09
Bromophenyl-phenylether, 4-	1.7E-09
Chloro-3-methylphenol, 4-	1.7E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	1.6E-09
Naphthalene	1.6E-09
HexaCDF, 2,3,4,6,7,8-	1.6E-09
Acetophenone	1.6E-09
Cresol, o-	1.6E-09
N-nitrosodimethylamine	1.4E-09
Butylbenzylphthalate	1.1E-09
Chlordane	1.1E-09
Dichlorobenzene, 1,3-	1.1E-09
HexaCDF, 1,2,3,4,7,8-	1.1E-09
2,5-Dimethylheptane	1.1E-09
Diethyl phthalate	1.0E-09
Acenaphthylene	1.0E-09
Tetrachloroethane, 1,1,2,2-	1.0E-09
HexaCDD, 1,2,3,4,7,8-	1.0E-09
Vinyl Acetate	9.9E-10
Dichloropropene, 1,3- (cis)	9.1E-10
Xylene, p-	8.8E-10
Xylene, m-	8.8E-10
PentaCDF, 1,2,3,7,8-	8.7E-10
Bis(2-chloroethoxy) methane	8.5E-10
Trichlorophenol, 2,4,5-	8.3E-10
Nitroaniline, 2-	8.1E-10
Nitrobenzene	8.1E-10

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Dichlorophenol, 2,4-	7.5E-10
Benzo(b)fluoranthene	7.4E-10
PentaCDD, 1,2,3,7,8-	7.2E-10
2-Hexanone	7.2E-10
Hexachloroethane (Perchloroethane)	7.2E-10
Cresol, p-	7.0E-10
Cresol, m-	7.0E-10
Dimethyl phthalate	6.9E-10
Endosulfan I	6.6E-10
Trichlorophenol, 2,4,6-	6.6E-10
BHC, beta-	6.1E-10
Pyridine	5.8E-10
Dibenzofuran	5.5E-10
Diphenylamine	5.5E-10
Bromobenzene	5.1E-10
Aldrin	5.0E-10
Tetrachlorobenzene, 1,2,4,5-	5.0E-10
Nitrosodiphenylamine, N-	4.9E-10
Isophorone	4.9E-10
Pentachlorobenzene	4.6E-10
Di-n-octylphthalate	4.5E-10
TetraCDD, 2,3,7,8-	4.1E-10
Trichlorobenzene, 1,2,4-	4.1E-10
Chrysene	4.0E-10
Aroclor 1254	3.7E-10
Diphenylhydrazine,1,2-	3.6E-10
3-Ethyl benzaldehyde	3.5E-10
4-Ethyl benzaldehyde	3.5E-10
Trichloropropane, 1,2,3-	3.2E-10
DDT, 4-4'-	3.1E-10
Butylbenzene, sec	3.0E-10
Xylene, o-	3.0E-10
1,1-Dichloropropene	2.6E-10
Trichloroethane, 1,1,2-	2.5E-10
Dieldrin	2.4E-10
Benzo(a)Anthracene	2.4E-10
BHC, alpha-	2.3E-10
Benzo(k)fluoranthene	2.1E-10
Styrene	2.1E-10
Bis(2-chlorethyl)ether	2.1E-10
2,2'-oxybis (1-Chloropropane)	2.0E-10
Iodomethane	1.9E-10
Indeno(1,2,3-cd) pyrene	1.5E-10
Methyl isobutyl ketone	1.4E-10
Benzo(a)pyrene	1.4E-10
OctaCDF, 1,2,3,4,6,7,8,9-	1.2E-10
gamma-BHC (Lindane)	1.2E-10
Ethylene dibromide	1.0E-10
HexaCDD, 1,2,3,7,8,9-	9.9E-11
Trichloroethylene	9.4E-11
Tetrahydrofuran	9.4E-11
Pyrene	9.1E-11
DDD, 4,4'-	9.1E-11
HexaCDD, 1,2,3,6,7,8-	8.4E-11
Tetrachloroethane, 1,1,1,2-	8.1E-11
1,3-Dichloropropane	7.7E-11
Butylbenzene, n-	7.4E-11
Dichloroethylene 1,1-	7.2E-11
2,2-Dichloropropane	7.1E-11
Butylbenzene, tert	7.1E-11
Vinyl Chloride	6.6E-11
Trichloroethane, 1,1,1-	6.3E-11
Anthracene	5.8E-11
Acenaphthene	5.7E-11
2-Methylnaphthalene	5.5E-11
Trimethylbenzene, 1,3,5-	5.0E-11
Dichlorobenzene, 1,2-	4.4E-11
HeptaCDF, 1,2,3,4,6,7,8-	4.2E-11
Dichloroethane, 1,2- (Ethylene Dichloride)	4.1E-11
Methoxychlor	2.8E-11
Dichlorobenzene,1,4-	2.6E-11
DDE, 4,4'-	2.5E-11
Fluorene	2.2E-11
OctaCDD, 1,2,3,4,6,7,8,9-	2.2E-11

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Cumene (Isopropylbenzene)	2.2E-11
2-Chlorotoluene	1.9E-11
4-Chlorotoluene	1.9E-11
Ethylene Glycol	1.7E-11
Propylbenzene, n-	1.6E-11
Trichlorofluoromethane (Freon 11)	1.4E-11
1,2,4-Trimethylbenzene	1.4E-11
Dichloroethylene, cis-1,2-	1.3E-11
Ethylbenzene	1.2E-11
Dichloropropane, 1,2-	1.2E-11
HexaCDF, 1,2,3,7,8,9-	9.2E-12
Benzo(g,h,i)perylene	8.4E-12
Chloroethane	8.1E-12
Dichlorodifluoromethane	7.9E-12
Bromochloromethane	7.8E-12
methyl tert-butyl ether	6.1E-12
HeptaCDF, 1,2,3,4,7,8,9-	6.0E-12
Propylene oxide	4.3E-12
Dichloroethylene-1,2 (trans)	4.0E-12
Dichloroethane 1,1-	3.8E-12
HeptaCDD, 1,2,3,4,6,7,8-	2.2E-12
Methyl methacrylate	1.1E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	5.1E-13
Dioxane, 1,4-	4.0E-13
Dibenz(a,h)anthracene	1.6E-13
Acrylic Acid	4.0E-14
1-Hexane (n-hexane)	7.1E-15
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	2.4E-02
R_4 resident farmer	
Nitrogen dioxide	1.6E-02
Arsenic	1.1E-02
Sulfur dioxide	5.9E-03
Chlorine	3.7E-03
Hydrogen chloride	1.7E-03
Beryllium	4.2E-04
Cadmium	1.7E-04
Nickel	3.6E-05
Lead	3.5E-05
Copper	3.0E-05
Mercury	1.6E-05
Mercuric chloride	4.1E-06
Hexachlorobenzene	4.1E-06
Chlorophenyl-phenylether, 4-	3.7E-06
Benzidine	2.8E-06
Chloroform (Trichloromethane)	2.8E-06
Dibromo-3-chloropropane, 1,2-	2.2E-06
Hexachlorocyclopentadiene	9.4E-07
Thallium (I)	6.3E-07
4,6-Dinitro-2-methylphenol	5.4E-07
Manganese	4.0E-07
Vanadium	3.6E-07
Silver	2.6E-07
Pentachlorophenol	2.6E-07
Tetrachloroethylene (Perchloroethylene)	2.4E-07
PentaCDF, 2,3,4,7,8-	1.5E-07

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Fluoranthene	1.5E-07
Zinc	1.3E-07
Barium	1.2E-07
Nitrosodipropylamine, n-	1.2E-07
Aluminum	8.0E-08
Antimony	7.2E-08
Chromium	7.0E-08
Chromium, hexavalent	7.0E-08
Bromoform (tribromomethane)	7.0E-08
Chlorobenzene	6.6E-08
Benzoic Acid	5.6E-08
Dinitrotoluene, 2,4-	5.5E-08
Selenium	5.5E-08
Ethylhexyl phthalate, bis-2-	5.1E-08
Benzene	5.1E-08
Methylene chloride	4.9E-08
3-Penten-2-one, 4-methyl	4.7E-08
Bromodichloromethane	4.6E-08
Dinitrotoluene, 2,6-	4.4E-08
Dibromochloromethane	4.3E-08
Methyl bromide (Bromomethane)	3.6E-08
Dinitrophenol, 2,4-	3.0E-08
Nitrophenol, 4-	2.9E-08
Nitroaniline, 3-	2.9E-08
Chloronaphthalene,2-	2.8E-08
Dichlorobenzidine, 3,3'-	2.3E-08
Methylene bromide	2.1E-08
Pentachloronitrobenzene (PCNB)	1.8E-08
Toluene	1.8E-08
Chlorobenzilate	1.4E-08
Dimethylphenol, 2,4-	1.3E-08
Acrylonitrile	1.2E-08
Nitrophenol, 2-	1.1E-08
Heptachlor	1.0E-08
Carbon Tetrachloride	9.9E-09
Carbazole	9.8E-09
Benzaldehyde	9.6E-09
Dinitrobenzene, 1,3-	9.2E-09
Methyl ethyl ketone (2-Butanone`	8.6E-09
Benzyl alcohol	8.6E-09
Phenanthrene	6.8E-09
Nitroaniline, 4-	6.2E-09
Benzonitrile	6.2E-09
Di-n-butyl phthalate	6.2E-09
Aniline	6.0E-09
Carbon Disulfide	5.7E-09
Methyl chloride (Chloromethane)	5.4E-09
Heptachlor epoxide	5.3E-09
Cobalt	5.2E-09
Phenol	5.0E-09
TetraCDF, 2,3,7,8-	4.8E-09
Endrin	4.0E-09
Chlorophenol, 2-	3.6E-09
Chloroaniline, p-	3.5E-09
HexaCDF, 1,2,3,6,7,8-	2.9E-09
Trichlorobenzene, 1,2,3-	2.9E-09
Acetone	2.9E-09
Bromophenyl-phenylether, 4-	2.8E-09
HexaCDF, 2,3,4,6,7,8-	2.7E-09
Chloro-3-methylphenol, 4-	2.7E-09
Hexachloro-1,3-butadiene (Perchlorobutadiene)	2.6E-09
Naphthalene	2.6E-09
Acetophenone	2.6E-09
Cresol, o-	2.6E-09
N-nitrosodimethylamine	2.3E-09
Butylbenzylphthalate	1.9E-09
HexaCDF, 1,2,3,4,7,8-	1.8E-09
Chlordane	1.8E-09
Dichlorobenzene, 1,3-	1.8E-09
2,5-Dimethylheptane	1.7E-09
HexaCDD, 1,2,3,4,7,8-	1.7E-09
Diethyl phthalate	1.7E-09
Acenaphthylene	1.7E-09
Tetrachloroethane, 1,1,2,2-	1.6E-09

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Vinyl Acetate	1.6E-09
Dichloropropene, 1,3- (cis)	1.5E-09
PentaCDF, 1,2,3,7,8-	1.5E-09
Xylene, p-	1.4E-09
Xylene, m-	1.4E-09
Bis(2-chloroethoxy) methane	1.4E-09
Trichlorophenol, 2,4,5-	1.3E-09
Nitroaniline, 2-	1.3E-09
Nitrobenzene	1.3E-09
Dichlorophenol, 2,4-	1.2E-09
PentaCDD, 1,2,3,7,8-	1.2E-09
Benzo(b)fluoranthene	1.2E-09
2-Hexanone	1.2E-09
Hexachloroethane (Perchloroethane)	1.2E-09
Cresol, p-	1.1E-09
Cresol, m-	1.1E-09
Dimethyl phthalate	1.1E-09
Endosulfan I	1.1E-09
Trichlorophenol, 2,4,6-	1.1E-09
BHC, beta-	9.9E-10
Pyridine	9.4E-10
Dibenzofuran	8.9E-10
Diphenylamine	8.9E-10
Bromobenzene	8.3E-10
Aldrin	8.1E-10
Tetrachlorobenzene, 1,2,4,5-	8.1E-10
Nitrosodiphenylamine, N-	8.0E-10
Isophorone	7.9E-10
Pentachlorobenzene	7.5E-10
Di-n-octylphthalate	7.4E-10
TetraCDD, 2,3,7,8-	6.8E-10
Chrysene	6.6E-10
Trichlorobenzene, 1,2,4-	6.6E-10
Aroclor 1254	6.1E-10
Diphenylhydrazine,1,2-	5.8E-10
3-Ethyl benzaldehyde	5.7E-10
4-Ethyl benzaldehyde	5.7E-10
Trichloropropane, 1,2,3-	5.2E-10
DDT, 4-4'-	5.1E-10
Butylbenzene, sec	4.9E-10
Xylene, o-	4.9E-10
1,1-Dichloropropene	4.3E-10
Trichloroethane, 1,1,2-	4.0E-10
Benzo(a)Anthracene	3.9E-10
Dieldrin	3.8E-10
BHC, alpha-	3.8E-10
Benzo(k)fluoranthene	3.6E-10
Styrene	3.4E-10
Bis(2-chlorethyl)ether	3.4E-10
2,2'-oxybis (1-Chloropropane)	3.2E-10
Iodomethane	3.0E-10
Indeno(1,2,3-cd) pyrene	2.6E-10
Methyl isobutyl ketone	2.3E-10
Benzo(a)pyrene	2.3E-10
OctaCDF, 1,2,3,4,6,7,8,9-	2.1E-10
gamma-BHC (Lindane)	1.9E-10
HexaCDD, 1,2,3,7,8,9-	1.7E-10
Ethylene dibromide	1.6E-10
Trichloroethylene	1.5E-10
Tetrahydrofuran	1.5E-10
DDD, 4,4'-	1.5E-10
Pyrene	1.5E-10
HexaCDD, 1,2,3,6,7,8-	1.4E-10
Tetrachloroethane, 1,1,1,2-	1.3E-10
1,3-Dichloropropane	1.2E-10
Butylbenzene, n-	1.2E-10
Dichloroethylene 1,1-	1.2E-10
2,2-Dichloropropane	1.2E-10
Butylbenzene, tert	1.2E-10
Vinyl Chloride	1.1E-10
Trichloroethane, 1,1,1-	1.0E-10
Anthracene	9.5E-11
Acenaphthene	9.2E-11
2-Methylnaphthalene	8.9E-11

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)
Trimethylbenzene, 1,3,5-	8.1E-11
HeptaCDF, 1,2,3,4,6,7,8-	7.1E-11
Dichlorobenzene, 1,2-	7.1E-11
Dichloroethane, 1,2- (Ethylene Dichloride)	6.6E-11
Methoxychlor	4.6E-11
Dichlorobenzene,1,4-	4.2E-11
DDE, 4,4'-	4.1E-11
OctaCDD, 1,2,3,4,6,7,8,9-	3.8E-11
Fluorene	3.6E-11
Cumene (Isopropylbenzene)	3.6E-11
2-Chlorotoluene	3.1E-11
4-Chlorotoluene	3.1E-11
Ethylene Glycol	2.7E-11
Propylbenzene, n-	2.6E-11
Trichlorofluoromethane (Freon 11)	2.3E-11
1,2,4-Trimethylbenzene	2.3E-11
Dichloroethylene, cis-1,2-	2.0E-11
Ethylbenzene	2.0E-11
Dichloropropane, 1,2-	2.0E-11
HexaCDF, 1,2,3,7,8,9-	1.5E-11
Benzo(g,h,i)perylene	1.4E-11
Chloroethane	1.3E-11
Dichlorodifluoromethane	1.3E-11
Bromochloromethane	1.3E-11
HeptaCDF, 1,2,3,4,7,8,9-	1.0E-11
methyl tert-butyl ether	9.9E-12
Propylene oxide	7.0E-12
Dichloroethylene-1,2 (trans)	6.5E-12
Dichloroethane 1,1-	6.2E-12
HeptaCDD, 1,2,3,4,6,7,8-	3.7E-12
Methyl methacrylate	1.7E-12
Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)	8.3E-13
Dioxane, 1,4-	6.5E-13
Dibenz(a,h)anthracene	2.7E-13
Acrylic Acid	6.5E-14
1-Hexane (n-hexane)	1.2E-14
Endosulfan sulfate	0.0E+00
2,5-Dione, 3-hexene	0.0E+00
Benzo(e)pyrene	0.0E+00
Perylene	0.0E+00
Phosphine imide, P,P,P-triphenyl	0.0E+00
Diallate	0.0E+00
9-Octadecenamide (oleamide)	0.0E+00
delta-BHC	0.0E+00
2-Methyl octane	0.0E+00
Endosulfan II	0.0E+00
Endrin ketone	0.0E+00
3-Penten-2-one (ethylidene acetone)	0.0E+00
2,5-Dimethylfuran	0.0E+00
Endrin aldehyde	0.0E+00
3-Hexen-2-one	0.0E+00
Benzoic acid, methyl ester (methyl benzoate)	0.0E+00
Isopropyl toluene, p-	0.0E+00
Total (c)	4.0E-02

NC = Not calculated.

(a) For those compounds with emission rates based on stack test data, emission rates for this acute analysis were based on maximum measured stack test measurements. For the remaining compounds (i.e., with emission rates based on proposed permit limits or calculated based on feed rate and destruction and removal efficiency), the emission rates for this acute analysis were the same as those used in the chronic risk assessment. The emission rates are listed in Table 3 in the Response to USEPA Comment Document.

(b) Acute hazard quotients were calculated for all compounds with stack air emission rates and acute inhalation toxicity criteria.

ACUTE INHALATION RISK RESULTS

REACTIVATION FACILITY STACK EMISSIONS - MAXIMUM MEASURED STACK EMISSION RATES (a)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (b)

(c) The total is based on the sum of all chemical-specific hazard quotients regardless of the type of health effects of the summed compounds. A total value summed across all compounds is used as a screening tool only, to determine if additional evaluation for specific types of health effects is warranted (i.e., if the total value is greater than 1).

ATTACHMENT E

FUGITIVE EMISSIONS RISK ASSESSMENT:
ACUTE INHALATION RISK RESULTS
USING MAXIMUM MODELED FUGITIVE EMISSION RATES

ATTACHMENT E

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Maximum Concentration in Spent Carbon Unloaded at Outdoor Hopper H-1 Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
A_1 maximum impact point (stack emissions)	
Benzene	7.0E-03
Chloroform (Trichloromethane)	3.8E-03
Tetrachloroethylene (Perchloroethylene)	4.4E-04
Vinyl Chloride	8.3E-05
Toluene	6.6E-05
Acrylonitrile	4.3E-05
Cyclohexane	2.7E-05
Styrene	1.7E-05
Arsenic	1.0E-05
Trichloroethylene	3.6E-06
Ethylbenzene	2.9E-06
1-Hexane (n-hexane)	2.6E-06
Nickel	1.2E-06
Dichlorobenzene,1,4-	3.2E-07
Cadmium	7.0E-08
Beryllium	5.2E-08
Naphthalene	2.8E-08
Copper	2.4E-08
Cobalt	7.1E-09
Chromium	5.2E-09
Ethylene Dibromide	1.4E-12
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.2E-02
A_2 closest business	
Benzene	1.6E-02
Chloroform (Trichloromethane)	8.4E-03
Tetrachloroethylene (Perchloroethylene)	9.8E-04
Vinyl Chloride	1.8E-04
Toluene	1.5E-04
Acrylonitrile	9.5E-05
Cyclohexane	5.9E-05
Styrene	3.8E-05
Arsenic	2.3E-05
Trichloroethylene	8.1E-06
Ethylbenzene	6.4E-06
1-Hexane (n-hexane)	5.7E-06
Nickel	2.7E-06
Dichlorobenzene,1,4-	7.1E-07
Cadmium	1.6E-07
Beryllium	1.2E-07
Naphthalene	6.2E-08
Copper	5.4E-08
Cobalt	1.6E-08
Chromium	1.2E-08
Ethylene Dibromide	3.2E-12
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	2.6E-02
A_3 maximum impact point (hopper fugitive emissions)	
Benzene	3.9E-01
Chloroform (Trichloromethane)	2.1E-01
Tetrachloroethylene (Perchloroethylene)	2.4E-02
Vinyl Chloride	4.6E-03
Toluene	3.6E-03
Acrylonitrile	2.4E-03
Cyclohexane	1.5E-03
Styrene	9.5E-04
Arsenic	5.6E-04
Trichloroethylene	2.0E-04
Ethylbenzene	1.6E-04

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Maximum Concentration in Spent Carbon Unloaded at Outdoor Hopper H-1 Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
1-Hexane (n-hexane)	1.4E-04
Nickel	6.8E-05
Dichlorobenzene,1,4-	1.8E-05
Cadmium	3.9E-06
Beryllium	2.9E-06
Naphthalene	1.5E-06
Copper	1.3E-06
Cobalt	3.9E-07
Chromium	2.9E-07
Ethylene Dibromide	7.9E-11
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	6.3E-01
R_1 resident	
Benzene	9.6E-04
Chloroform (Trichloromethane)	5.2E-04
Tetrachloroethylene (Perchloroethylene)	6.1E-05
Vinyl Chloride	1.1E-05
Toluene	9.0E-06
Acrylonitrile	5.8E-06
Cyclohexane	3.6E-06
Styrene	2.4E-06
Arsenic	1.4E-06
Trichloroethylene	5.0E-07
Ethylbenzene	3.9E-07
1-Hexane (n-hexane)	3.5E-07
Nickel	1.7E-07
Dichlorobenzene,1,4-	4.4E-08
Cadmium	9.6E-09
Beryllium	7.1E-09
Naphthalene	3.8E-09
Copper	3.3E-09
Cobalt	9.7E-10
Chromium	7.1E-10
Ethylene Dibromide	2.0E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.6E-03
R_2 resident	
Benzene	8.9E-04
Chloroform (Trichloromethane)	4.8E-04
Tetrachloroethylene (Perchloroethylene)	5.6E-05
Vinyl Chloride	1.0E-05
Toluene	8.3E-06
Acrylonitrile	5.4E-06
Cyclohexane	3.3E-06
Styrene	2.2E-06
Arsenic	1.3E-06
Trichloroethylene	4.6E-07
Ethylbenzene	3.6E-07
1-Hexane (n-hexane)	3.2E-07
Nickel	1.6E-07
Dichlorobenzene,1,4-	4.1E-08
Cadmium	8.8E-09
Beryllium	6.5E-09
Naphthalene	3.5E-09
Copper	3.1E-09
Cobalt	8.9E-10
Chromium	6.6E-10
Ethylene Dibromide	1.8E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.4E-03

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Maximum Concentration in Spent Carbon Unloaded at Outdoor Hopper H-1 Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
R_3 resident farmer	
Benzene	7.2E-04
Chloroform (Trichloromethane)	3.9E-04
Tetrachloroethylene (Perchloroethylene)	4.5E-05
Vinyl Chloride	8.5E-06
Toluene	6.7E-06
Acrylonitrile	4.4E-06
Cyclohexane	2.7E-06
Styrene	1.8E-06
Arsenic	1.0E-06
Trichloroethylene	3.7E-07
Ethylbenzene	3.0E-07
1-Hexane (n-hexane)	2.6E-07
Nickel	1.3E-07
Dichlorobenzene,1,4-	3.3E-08
Cadmium	7.2E-09
Beryllium	5.3E-09
Naphthalene	2.9E-09
Copper	2.5E-09
Cobalt	7.2E-10
Chromium	5.3E-10
Ethylene Dibromide	1.5E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.2E-03
R_4 resident farmer	
Benzene	9.3E-04
Chloroform (Trichloromethane)	5.0E-04
Tetrachloroethylene (Perchloroethylene)	5.8E-05
Vinyl Chloride	1.1E-05
Toluene	8.6E-06
Acrylonitrile	5.6E-06
Cyclohexane	3.5E-06
Styrene	2.3E-06
Arsenic	1.4E-06
Trichloroethylene	4.8E-07
Ethylbenzene	3.8E-07
1-Hexane (n-hexane)	3.4E-07
Nickel	1.6E-07
Dichlorobenzene,1,4-	4.2E-08
Cadmium	9.2E-09
Beryllium	6.8E-09
Naphthalene	3.7E-09
Copper	3.2E-09
Cobalt	9.3E-10
Chromium	6.9E-10
Ethylene Dibromide	1.9E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.5E-03
R_5 resident	
Benzene	1.2E-03
Chloroform (Trichloromethane)	6.2E-04
Tetrachloroethylene (Perchloroethylene)	7.3E-05
Vinyl Chloride	1.4E-05
Toluene	1.1E-05
Acrylonitrile	7.0E-06
Cyclohexane	4.4E-06
Styrene	2.8E-06
Arsenic	1.7E-06
Trichloroethylene	6.0E-07
Ethylbenzene	4.8E-07

ACUTE INHALATION RISK RESULTS
FUGITIVE AIR EMISSIONS DURING UNLOADING AT OUTDOOR HOPPER

Emission Rates Based On Maximum Concentration in Spent Carbon Unloaded at Outdoor Hopper H-1 Over 4-Year Period (2003-2006 Data)

COMPOUND	ACUTE INHALATION HAZARD QUOTIENT (a)
1-Hexane (n-hexane)	4.2E-07
Nickel	2.0E-07
Dichlorobenzene,1,4-	5.3E-08
Cadmium	1.2E-08
Beryllium	8.5E-09
Naphthalene	4.6E-09
Copper	4.0E-09
Cobalt	1.2E-09
Chromium	8.6E-10
Ethylene Dibromide	2.4E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	1.9E-03
R_6 resident	
Benzene	5.2E-04
Chloroform (Trichloromethane)	2.8E-04
Tetrachloroethylene (Perchloroethylene)	3.3E-05
Vinyl Chloride	6.1E-06
Toluene	4.9E-06
Acrylonitrile	3.2E-06
Cyclohexane	2.0E-06
Styrene	1.3E-06
Arsenic	7.6E-07
Trichloroethylene	2.7E-07
Ethylbenzene	2.1E-07
1-Hexane (n-hexane)	1.9E-07
Nickel	9.2E-08
Dichlorobenzene,1,4-	2.4E-08
Cadmium	5.2E-09
Beryllium	3.8E-09
Naphthalene	2.1E-09
Copper	1.8E-09
Cobalt	5.2E-10
Chromium	3.9E-10
Ethylene Dibromide	1.1E-13
1,3-Butadiene	0.0E+00
Chromium, hexavalent	0.0E+00
Total (b)	8.5E-04

(a) Acute hazard quotients were calculated for all compounds with fugitive air emission rates and acute inhalation toxicity criteria.

(b) The total is based on the sum of all chemical-specific hazard quotients regardless of the type of health effects of the summed compounds. A total value summed across all compounds is used as a screening tool only, to determine if additional evaluation for specific types of health effects is warranted (i.e., if the total value is greater than 1).

ATTACHMENT F

FACILITY EFFLUENT MONITORING REPORTS FOR 2005-2006

(PROVIDED IN SEPARATE PDF FILE)

Siemens Water Technologies Corp
Report on Compliance with Categorical Pretreatment Standards
Summary of Sample Results - June 2005

Analyte	CWT Limits 40 CFR 437.46(b)		Method 200.7 / 7470	Sample Result[1]			
Metals - 200.7 / 7470	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IOF0712-01**	**NA**	**NA**	**NA**
Antimony (200.7)	0.249	0.206	0.010	ND			
Arsenic (200.7)	0.162	0.104	0.0050	0.013			
Cadmium (200.7)	0.474	0.0962	0.0050	ND			
Chromium (200.7)	0.947	0.487	0.0050	0.005			
Cobalt (200.7)	0.192	0.124	0.010	ND			
Copper (200.7)	0.405	0.301	0.010	ND			
Lead (200.7)	0.222	0.172	0.0050	ND			
Mercury (7470)	0.00234	0.000739	0.00020	ND			
Nickel (200.7)	3.95	1.45	0.010	ND			
Silver (200.7)	0.120	0.0351	0.010	ND			
Tin (200.7)	0.409	0.120	0.10	ND			
Titanium (200.7)	0.0947	0.0618	0.0050	ND			
Vanadium (200.7)	0.218	0.0662	0.010	ND			
Zinc (200.7)	2.87	0.641	0.020	ND			

Analyte	CWT Limits 40 CFR 437.46(b)		Method 625	Sample Result[1]			
Organics - 625	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IOF0712-02**	**IOF0712-03**	**IOF0712-04**	**IOF0712-05**
2,3-Dichloroaniline	0.0731	0.0361	0.005	ND	ND	ND	ND
Bis(2-ethylhexyl) phthalate	0.267	0.158	0.01	ND	ND	ND	ND
Carbazole	0.392	0.233	0.005	ND	ND	ND	ND
o-Cresol	1.92	0.561	0.005	ND	ND	ND	ND
p-Cresol	0.698	0.205	0.005	ND	ND	ND	ND
n-Decane	5.79	3.31	0.005	ND	ND	ND	ND
Fluoranthene	0.787	0.393	0.01	ND	ND	ND	ND
n-Octadecane	1.22	0.925	0.005	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.155	0.106	0.01	ND	ND	ND	ND

Analyte	CWT Limits		Method 413.1	Sample Result[1]			
Oil & Grease - 413.1	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IOF0712-02**	**IOF0712-03**	**IOF0712-04**	**IOF0712-05**
Oil and Grease	127	38	5	ND	ND	ND	ND

[1] mg/l (ppm)

ND - Analyte Not Detected at or above reporting limit

Siemens Water Technologies Corp
Report on Compliance with Categorical Pretreatment Standards
Summary of Sample Results - December 2005

Analyte	CWT Limits 40 CFR 437.46(b)		Method 200.7 / 7470	Sample Result[1]			
Metals - 200.7 / 7470	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IOL1934-01**	**NA**	**NA**	**NA**
Antimony (200.7)	0.249	0.206	0.010	ND			
Arsenic (200.7)	0.162	0.104	0.0050	0.011			
Cadmium (200.7)	0.474	0.0962	0.0050	ND			
Chromium (200.7)	0.947	0.487	0.0050	0.0059			
Cobalt (200.7)	0.192	0.124	0.010	ND			
Copper (200.7)	0.405	0.301	0.010	ND			
Lead (200.7)	0.222	0.172	0.0050	ND			
Mercury (7470)	0.00234	0.000739	0.00020	ND			
Nickel (200.7)	3.95	1.45	0.010	ND			
Silver (200.7)	0.120	0.0351	0.010	ND			
Tin (200.7)	0.409	0.120	0.10	ND			
Titanium (200.7)	0.0947	0.0618	0.0050	ND			
Vanadium (200.7)	0.218	0.0662	0.010	ND			
Zinc (200.7)	2.87	0.641	0.020	ND			

Analyte	CWT Limits 40 CFR 437.46(b)		Method 625	Sample Result[2]			
Organics - 625	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[2]**	**IOL1934-02**	**IOL1934-03**	**IOL1934-04**	**IOL1934-05**
Bis(2-ethylhexyl) phthalate	0.267	0.158	9.6	ND	ND	ND	ND
Carbazole	0.392	0.233	4.8	ND	ND	ND	ND
o-Cresol	1.92	0.561	4.8	ND	ND	ND	ND
p-Cresol	0.698	0.205	4.8	ND	ND	ND	ND
n-Decane	5.79	3.31	4.8	ND	ND	ND	ND
Fluoranthene	0.787	0.393	9.6	ND	ND	ND	ND
n-Octadecane	1.22	0.925	4.8	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.155	0.106	9.6	ND	ND	ND	ND

Analyte	CWT Limits		Method 413.1	Sample Result[1]			
Oil & Grease - 413.1	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IOL1934-02**	**IOL1934-03**	**IOL1934-04**	**IOL1934-05**
Oil and Grease	127	38	4.8	ND	ND	ND	ND

[1] mg/l (ppm) [2] ug/l (ppb)

ND - Analyte Not Detected at or above reporting limit

Siemens Water Technologies Corp
Report on Compliance with Categorical Pretreatment Standards
Summary of Sample Results - June 2006

Analyte	CWT Limits 40 CFR 437.46(b)		Method 200.7 / 7470	Sample Result[1]			
Metals - 200.7 / 7470	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IPE2573-01**	**NA**	**NA**	**NA**
Antimony (200.7)	0.249	0.206	0.010	ND			
Arsenic (200.7)	0.162	0.104	0.0050	0.012			
Cadmium (200.7)	0.474	0.0962	0.0050	ND			
Chromium (200.7)	0.947	0.487	0.0050	ND			
Cobalt (200.7)	0.192	0.124	0.010	ND			
Copper (200.7)	0.405	0.301	0.010	ND			
Lead (200.7)	0.222	0.172	0.0050	ND			
Mercury (7470)	0.00234	0.000739	0.00020	ND			
Nickel (200.7)	3.95	1.45	0.010	ND			
Silver (200.7)	0.120	0.0351	0.010	ND			
Tin (200.7)	0.409	0.120	0.10	ND			
Titanium (200.7)	0.0947	0.0618	0.0050	ND			
Vanadium (200.7)	0.218	0.0662	0.010	0.031			
Zinc (200.7)	2.87	0.641	0.020	ND			

Analyte	CWT Limits 40 CFR 437.46(b)		Method 625	Sample Result[2]			
Organics - 625	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[2]**	**IPE2573-02**	**IPE2573-03**	**IPE2573-04**	**IPE2573-05**
Bis(2-ethylhexyl) phthalate	0.267	0.158	9.5	ND	ND	ND	ND
Carbazole	0.392	0.233	4.8	ND	ND	ND	ND
o-Cresol	1.92	0.561	4.8	ND	ND	ND	ND
p-Cresol	0.698	0.205	4.8	ND	ND	ND	ND
n-Decane	5.79	3.31	4.8	ND	ND	ND	ND
Fluoranthene	0.787	0.393	9.5	ND	ND	ND	ND
n-Octadecane	1.22	0.925	4.8	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.155	0.106	9.5	ND	ND	ND	ND

Analyte	CWT Limits		Method 413.1	Sample Result[1]			
Oil & Grease - 413.1	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IPE2573-02**	**IPE2573-03**	**IPE2573-04**	**IPE2573-05**
Oil and Grease	127	38	4.8	ND	ND	ND	ND

[1] mg/l (ppm) [2] ug/l (ppb)

ND - Analyte Not Detected at or above reporting limit

Siemens Water Technologies Corp
Report on Compliance with Categorical Pretreatment Standards
Summary of Sample Results - December 2006

Analyte	CWT Limits 40 CFR 437.46(b)		Method 200.7 / 7470	Sample Result[1]			
Metals - 200.7 / 7470	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IPL1042-01**	**NA**	**NA**	**NA**
Antimony (200.7)	0.249	0.206	0.010	ND			
Arsenic (200.7)	0.162	0.104	0.010	ND			
Cadmium (200.7)	0.474	0.0962	0.0050	ND			
Chromium (200.7)	0.947	0.487	0.0050	ND			
Cobalt (200.7)	0.192	0.124	0.010	ND			
Copper (200.7)	0.405	0.301	0.010	ND			
Lead (200.7)	0.222	0.172	0.0050	ND			
Mercury (7470)	0.00234	0.000739	0.00020	ND			
Nickel (200.7)	3.95	1.45	0.010	ND			
Silver (200.7)	0.120	0.0351	0.010	ND			
Tin (200.7)	0.409	0.120	0.10	ND			
Titanium (200.7)	0.0947	0.0618	0.0050	ND			
Vanadium (200.7)	0.218	0.0662	0.010	ND			
Zinc (200.7)	2.87	0.641	0.020	ND			

Analyte	CWT Limits 40 CFR 437.46(b)		Method 625	Sample Result[2]			
Organics - 625	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[2]**	**IPL1042-02**	**IPL1042-03**	**IPL1042-04**	**IPL1042-05**
Bis(2-ethylhexyl) phthalate	0.267	0.158	9.5	ND	ND	ND	ND
Carbazole	0.392	0.233	4.8	ND	ND	ND	ND
o-Cresol	1.92	0.561	4.8	ND	ND	ND	ND
p-Cresol	0.698	0.205	4.8	ND	ND	ND	ND
n-Decane	5.79	3.31	4.8	ND	ND	ND	ND
Fluoranthene	0.787	0.393	9.5	ND	ND	ND	ND
n-Octadecane	1.22	0.925	4.8	ND	ND	ND	ND
2,4,6-Trichlorophenol	0.155	0.106	9.5	ND	ND	ND	ND

Analyte	CWT Limits		Method 413.1	Sample Result[1]			
Oil & Grease - 413.1	**Maximum Daily[1]**	**Monthly Average[1]**	**Reporting Limit[1]**	**IPL1042-02**	**IPL1042-03**	**IPL1042-04**	**IPL1042-05**
Oil and Grease	127	38	4.8	ND	ND	ND	ND

[1] mg/l (ppm)

[2] ug/l (ppb)

ND - Analyte Not Detected at or above reporting limit

Table 3-9. Makeup Water, Caustic, and Scrubber Purge POHC Concentration

Constituent	Makeup Water (ug/L)				Caustic (ug/L)				Scrubber Blowdown (ug/L)				POTW Discharge (ug/L)			
	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average	Run 1	Run 2	Run 3	Average
Metals																
Aluminum	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 1.10E+02	< 4.40E+02	NA	NA	< 4.40E+02	1.37E+04	1.17E+04	1.76E+04	1.43E+04	1.14E+02	< 1.10E+02	1.48E+02	< 1.24E+02
Antimony	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 5.60E+01	NA	NA	< 5.60E+01	< 1.40E+01	< 1.40E+01	1.77E+01	< 1.52E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01	< 1.40E+01
Arsenic	< 5.10E+00	5.90E+00	< 5.10E+00	< 5.37E+00	< 2.04E+01	NA	NA	< 2.04E+01	3.67E+01	2.61E+01	3.93E+01	3.40E+01	1.37E+01	1.26E+01	1.19E+01	1.27E+01
Barium	5.12E+01	5.19E+01	4.92E+01	5.08E+01	3.63E+02	NA	NA	3.63E+02	8.74E+02	7.65E+02	1.13E+03	9.23E+02	2.47E+02	2.26E+02	2.38E+02	2.37E+02
Beryllium	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 7.20E+00	NA	NA	< 7.20E+00	3.80E+00	3.70E+00	5.40E+00	4.30E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00	< 1.80E+00
Cadmium	< 8.20E-01	< 8.20E-01	< 8.20E-01	< 8.20E-01	< 3.30E+00	NA	NA	< 3.30E+00	1.13E+01	1.17E+01	1.37E+01	1.22E+01	< 8.20E-01	< 8.20E-01	2.40E+00	< 1.35E+00
Chromium *	< 3.90E+00	< 3.90E+00	< 3.90E+00	< 3.90E+00	3.64E+02	NA	NA	3.64E+02	1.72E+03	1.75E+03	2.90E+03	2.12E+03	2.46E+01	1.30E+01	2.51E+01	2.09E+01
Cobalt	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 8.80E+00	NA	NA	< 8.80E+00	3.15E+01	2.64E+01	4.05E+01	3.28E+01	< 2.20E+00	< 2.20E+00	< 2.20E+00	< 2.20E+00
Copper	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 2.80E+01	NA	NA	< 2.80E+01	1.78E+03	9.65E+02	6.69E+02	1.14E+03	< 7.00E+00	< 7.00E+00	< 7.00E+00	< 7.00E+00
Lead *	< 3.70E+00	< 3.70E+00	< 3.70E+00	< 3.70E+00	9.75E+01	NA	NA	9.75E+01	7.21E+02	5.92E+02	1.51E+03	9.41E+02	< 3.70E+00	< 3.70E+00	< 3.70E+00	< 3.70E+00
Manganese	1.54E+01	1.85E+01	1.40E+01	1.60E+01	7.48E+01	NA	NA	7.48E+01	3.38E+03	3.10E+03	4.32E+03	3.60E+03	1.15E+02	6.12E+01	8.59E+01	8.74E+01
Mercury	< 6.00E-02	< 6.00E-02	< 6.00E-02	< 6.00E-02	3.50E+00	NA	NA	3.50E+00	3.50E-01	4.20E-01	4.50E-01	4.07E-01	< 6.00E-02	< 6.00E-02	< 6.00E-02	< 6.00E-02
Nickel	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00	1.50E+02	NA	NA	1.50E+02	4.33E+02	3.97E+02	4.05E+02	4.12E+02	< 3.80E+00	< 3.80E+00	4.80E+00	< 4.13E+00
Selenium	< 4.30E+00	< 4.30E+00	< 4.30E+00	< 4.30E+00	< 1.72E+01	NA	NA	< 1.72E+01	1.19E+01	8.80E+00	1.21E+01	1.09E+01	1.10E+01	1.00E+01	9.00E+00	1.00E+01
Silver	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	5.30E+01	NA	NA	5.30E+01	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00	< 9.70E+00
Thallium	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 4.00E+01	NA	NA	< 4.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01	< 1.00E+01
Vanadium	< 5.00E+00	< 5.00E+00	< 5.00E+00	< 5.00E+00	< 2.00E+01	NA	NA	< 2.00E+01	8.43E+01	5.81E+01	1.09E+02	8.38E+01	2.56E+01	1.66E+01	2.10E+01	2.11E+01
Zinc	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00	2.04E+02	NA	NA	2.04E+02	7.65E+02	5.64E+02	6.45E+02	6.58E+02	< 3.80E+00	< 3.80E+00	< 3.80E+00	< 3.80E+00
Volatile Organics																
Acetone	4.40E+00	3.80E+00	4.50E+00	4.23E+00	4.50E+00	NA	NA	4.50E+00	ND	4.10E+00	3.60E+00	3.85E+00	3.70E+00	3.70E+00	4.80E+00	4.07E+00
Bromobenzene	ND	ND	ND	ND	1.80E-01	NA	NA	1.80E-01	ND	ND	ND	ND	ND	ND	ND	ND
Bromodichloromethane	3.20E+00	4.10E+00	2.50E+00	3.27E+00	8.60E-01	NA	NA	8.60E-01	ND	ND	ND	ND	ND	8.90E-01	1.00E+00	9.45E-01
Bromoform	4.00E+01	3.20E+01	2.80E+01	3.33E+01	2.80E+00	NA	NA	ND	9.90E-01	9.20E-01	1.00E+00	9.70E-01	2.00E+00	2.00E+00	2.10E+00	2.03E+00
Carbon disulfide	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	1.60E-01	1.60E-01
Chlorodibromomethane	1.30E+01	1.30E+01	8.90E+00	1.16E+01	1.00E+00	NA	NA	1.00E+00	9.20E-01	8.70E-01	8.90E-01	8.93E-01	1.40E+00	1.30E+00	1.40E+00	1.37E+00
Chloroform	5.60E-01	6.40E-01	6.20E-01	6.07E-01	1.70E-01	NA	NA	1.70E-01	ND	ND	ND	ND	1.40E-01	1.50E-01	1.40E-01	1.43E-01
1,2-Dichloroethane	ND	1.30E-01	1.20E-01	1.25E-01	1.30E-01	NA	NA	1.30E-01	ND	ND	ND	ND	ND	ND	ND	ND
Iodomethane	ND	ND	ND	ND	ND	NA	NA	ND	5.50E-01	ND	ND	5.50E-01	ND	ND	ND	ND
Methylene chloride *	5.50E-01	2.40E+00	2.00E+00	1.65E+00	5.30E-01	NA	NA	ND	ND	2.30E+00	8.40E-01	1.57E+00	3.50E-01	2.00E+00	6.50E-01	1.00E+00
Tetrachloroethene *	3.30E-01	3.10E-01	4.50E-01	3.63E-01	2.40E-01	NA	NA	2.40E-01	ND	ND	ND	ND	1.30E-01	ND	ND	1.30E-01
Toluene *	ND	4.10E-01	3.10E-01	3.60E-01	ND	NA	NA	ND	ND	4.10E-01	ND	4.10E-01	ND	4.30E-01	1.20E-01	2.75E-01
Semivolatile Organics																
bis(2-ethylhexyl)phthalate	ND	ND	ND	ND	4.10E+01	NA	NA		ND	ND	ND	ND	ND	ND	ND	ND

Note: Only detected organics shown on this table.

* These compounds were spiked into the feed materials during the PDT.

USFilter

USFILTER W[illegible]ATES
P.O. Box 3308
2523 Mutahar Street
Parker, AZ 85344

Telephone 928-669-5758
Facsimile 928-669-5775

VIA Certified Mail

August 1, 2005

Mr. Andy Jones
Plant Manager
Colorado River Sewage System Joint Venture
P.O. Box 628
Parker, Arizona 85344

Re: Westates Carbon-Arizona, Inc.
Priority Pollutants Testing Report 2005

Dear Mr. Jones:

In accordance with our Industrial Wastewater Discharge Permit Number 1002-96, I am submitting the 2005 Priority Pollutants Testing Report, per our agreement, for analytes from 40 CFR Part 122, Table 2 and Table 5. As per your verbal request we have also tested analytes contained in Table III and IV.

Please call if you have any questions or require any further information.

Sincerely,

DFoster

Deborah Foster
EHS Specialist

Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

LABORATORY REPORT

Prepared For: U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project: TTO

Sampled: 07/13/05
Received: 07/14/05
Issued: 07/27/05 17:35

NELAP #01108CA California ELAP#1197 CSDLAC #10117

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.
This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

SUBCONTRACTED: Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOG0857-01	TTO	Water

Reviewed By:

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Acrolein	EPA 8260B	5G16003	50	ND	1	7/16/2005	7/16/2005	
Acrylonitrile	EPA 8260B	5G16003	50	ND	1	7/16/2005	7/16/2005	
2-Chloroethyl vinyl ether	EPA 8260B	5G16003	5.0	ND	1	7/16/2005	7/16/2005	
Surrogate: Dibromofluoromethane (80-120%)				*99 %*				
Surrogate: Toluene-d8 (80-120%)				*102 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)				*96 %*				

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Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Benzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Bromobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromochloromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromodichloromethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Bromoform	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromomethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
n-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
sec-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
tert-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Carbon Disulfide	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Carbon tetrachloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Chlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Chloroethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Chloroform	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Chloromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
2-Chlorotoluene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
4-Chlorotoluene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Dibromochloromethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dibromo-3-chloropropane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2-Dibromoethane (EDB)	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Dibromomethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,4-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Dichlorodifluoromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloroethene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
cis-1,2-Dichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
trans-1,2-Dichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
2,2-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
cis-1,3-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
trans-1,3-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Ethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Hexachlorobutadiene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Isopropylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
p-Isopropyltoluene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Methylene chloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
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U.S. Filter Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Naphthalene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
n-Propylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Styrene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1,1,2-Tetrachloroethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1,2,2-Tetrachloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Tetrachloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Toluene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2,3-Trichlorobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2,4-Trichlorobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1,1-Trichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1,2-Trichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Trichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Trichlorofluoromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2,3-Trichloropropane	EPA 8260B	5G21019	10	ND	1	7/21/2005	7/21/2005	
1,2,4-Trimethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3,5-Trimethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Vinyl acetate	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Vinyl chloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
o-Xylene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
m,p-Xylenes	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Surrogate: Dibromofluoromethane (80-120%)				*90 %*				
Surrogate: Toluene-d8 (80-120%)				*104 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)				*95 %*				

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Del Mar Analytical

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Parker, AZ 85344
Attention: Deborah Foster

Project ID: ITO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (ITO - Water)								
Reporting Units: ug/l								
Acenaphthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Acenaphthylene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Aniline	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Anthracene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzidine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	L
Benzoic acid	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Benzo(a)anthracene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(b)fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(k)fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(g,h,i)perylene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(a)pyrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzyl alcohol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroethoxy)methane	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroethyl)ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroisopropyl)ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-ethylhexyl)phthalate	EPA 8270C	5G17017	50	ND	1	7/17/2005	7/20/2005	
4-Bromophenyl phenyl ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Butyl benzyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
4-Chloroaniline	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Chloronaphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Chloro-3-methylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2-Chlorophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Chlorophenyl phenyl ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Chrysene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Dibenz(a,h)anthracene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Dibenzofuran	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Di-n-butyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
1,3-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,4-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,2-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
3,3-Dichlorobenzidine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dichlorophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Diethyl phthalate	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,4-Dimethylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Dimethyl phthalate	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4,6-Dinitro-2-methylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dinitrophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dinitrotoluene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,6-Dinitrotoluene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Di-n-octyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	

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P.O. Box 3308
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Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Fluorene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorobutadiene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorocyclopentadiene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Hexachloroethane	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Indeno(1,2,3-cd)pyrene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Isophorone	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Methylnaphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Methylphenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Methylphenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Naphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
3-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
4-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Nitrobenzene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2-Nitrophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Nitrophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
N-Nitrosodiphenylamine	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
N-Nitroso-di-n-propylamine	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Pentachlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Phenanthrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Phenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Pyrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,2,4-Trichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,4,5-Trichlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4,6-Trichlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
N-Nitrosodimethylamine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	C
1,2-Diphenylhydrazine/Azobenzene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Surrogate: 2-Fluorophenol (30-120%)				60 %				
Surrogate: Phenol-d6 (35-120%)				70 %				
Surrogate: 2,4,6-Tribromophenol (45-120%)				54 %				
Surrogate: Nitrobenzene-d5 (45-120%)				71 %				
Surrogate: 2-Fluorobiphenyl (45-120%)				75 %				
Surrogate: Terphenyl-d14 (45-120%)				80 %				

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Aldrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
alpha-BHC	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
beta-BHC	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
delta-BHC	EPA 3510C/8081A	5G20057	0.20	ND	0.971	7/20/2005	7/20/2005	
gamma-BHC (Lindane)	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Chlordane	EPA 3510C/8081A	5G20057	1.0	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDD	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDE	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDT	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Dieldrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan I	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan II	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan sulfate	EPA 3510C/8081A	5G20057	0.20	ND	0.971	7/20/2005	7/20/2005	
Endrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endrin aldehyde	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endrin ketone	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Heptachlor	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Heptachlor epoxide	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Methoxychlor	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Toxaphene	EPA 3510C/8081A	5G20057	5.0	ND	0.971	7/20/2005	7/20/2005	
Surrogate: Tetrachloro-m-xylene (35-115%)				*56 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*73 %*				

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Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

POLYCHLORINATED BIPHENYLS (EPA 3510C/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Aroclor 1016	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1221	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1232	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1242	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1248	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1254	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1260	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Surrogate: Decachlorobiphenyl (45-120%)				88 %				

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METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Aluminum	EPA 6010B	5G19086	0.050	**0.082**	1	7/19/2005	7/20/2005	
Antimony	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Arsenic	EPA 6010B	5G18097	0.0050	**0.0052**	1	7/18/2005	7/20/2005	
Barium	EPA 6010B	5G18097	0.010	**0.075**	1	7/18/2005	7/20/2005	
Boron	EPA 6010B	5G19086	0.050	**0.64**	1	7/19/2005	7/20/2005	
Chromium	EPA 6010B	5G18097	0.0050	ND	1	7/18/2005	7/20/2005	
Cobalt	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Copper	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Iron	EPA 6010B	5G19086	0.040	ND	1	7/19/2005	7/20/2005	
Magnesium	EPA 6010B	5G19086	0.020	**29**	1	7/19/2005	7/20/2005	
Manganese	EPA 6010B	5G19086	0.020	ND	1	7/19/2005	7/20/2005	
Mercury	EPA 7470A	5G19037	0.00020	ND	1	7/19/2005	7/19/2005	
Molybdenum	EPA 6010B	5G18097	0.020	ND	1	7/18/2005	7/20/2005	
Silver	EPA 6010B	5G18097	0.0070	ND	1	7/18/2005	7/20/2005	
Strontium	EPA 6010B	5G19086	0.020	**1.7**	1	7/19/2005	7/20/2005	
Thallium	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Tin	EPA 6010B	5G19086	0.10	ND	1	7/19/2005	7/20/2005	
Titanium	EPA 6010B	5G19086	0.0050	ND	1	7/19/2005	7/20/2005	
Vanadium	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Zinc	EPA 6010B	5G18097	0.020	ND	1	7/18/2005	7/20/2005	
Zirconium	EPA 6010B	5G25067	0.20	ND	1	7/25/2005	7/25/2005	

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Received: 07/14/05

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: Color Units								
Color	SM2120B	5G14089	1.0	ND	1	7/14/2005	7/14/2005	pH
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-NORG.C	5G19066	0.50	**0.84**	1	7/19/2005	7/19/2005	
Ammonia-N	EPA 350.3	5G22113	0.50	ND	1	7/22/2005	7/22/2005	
Bromide	EPA 300.0	5G14039	0.50	**1.1**	1	7/14/2005	7/14/2005	
Total Cyanide	SM4500-CN-C,E	5G15075	0.025	ND	1	7/15/2005	7/18/2005	
Fluoride	EPA 300.0	5G14039	0.50	**1.8**	1	7/14/2005	7/14/2005	
Nitrate-N	EPA 300.0	5G14039	0.15	**2.7**	1	7/14/2005	7/14/2005	
Nitrite-N	EPA 300.0	5G14039	1.5	ND	10	7/14/2005	7/14/2005	RL-3
Oil & Grease	EPA 413.1	5G20078	5.0	ND	1	7/20/2005	7/20/2005	
Phenols	EPA 420.1	5G22080	0.10	ND	1	7/22/2005	7/22/2005	
Phosphorus	EPA 365.3	5G14075	0.050	**0.15**	1	7/14/2005	7/14/2005	
Residual Chlorine	EPA 330.5	5G14094	0.10	ND	1	7/14/2005	7/14/2005	
Sulfate	EPA 300.0	5G14039	5.0	**480**	10	7/14/2005	7/14/2005	
Sulfide	EPA 376.2	5G15045	0.10	ND	1	7/15/2005	7/15/2005	
Surfactants (MBAS)	SM5540-C	5G14118	0.10	ND	1	7/14/2005	7/14/2005	

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NITROGEN, ORGANIC (Calculation)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Organic Nitrogen - N	Calculation	5G25044	0.50	0.84	1	7/25/2005	7/25/2005	

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DIQUAT/PARAQUAT (EPA 549.2)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Diquat	EPA 549.2	C5G1809	4.0	ND	1	7/18/2005	7/18/2005	
Paraquat	EPA 549.2	C5G1809	20	ND	1	7/18/2005	7/18/2005	

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[illegible]

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Attention: Deborah Foster

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Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: TTO (IOG0857-01) - Water					
EPA 300.0	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 16:00	07/14/2005 16:09
Nitrate				07/14/2005 16:00	07/14/2005 17:16
EPA 330.5	1	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 16:08	07/14/2005 16:08
SM2130B	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 14:00	07/14/2005 15:00
SM5540C	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 23:00	07/14/2005 23:55

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Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G16003 Extracted: 07/16/05										
Blank Analyzed: 07/16/2005 (5G16003-BLK1)										
Acrolein	ND	50	ug/l							
Acrylonitrile	ND	50	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	ug/l							
Surrogate: Dibromofluoromethane	*23.9*		*ug/l*	*25.0*		*96*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.2*		*ug/l*	*25.0*		*97*	*80-120*			
LCS Analyzed: 07/16/2005 (5G16003-BS1)										
2-Chloroethyl vinyl ether	29.4	5.0	ug/l	25.0		118	25-170			
Surrogate: Dibromofluoromethane	*24.5*		*ug/l*	*25.0*		*98*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.8*		*ug/l*	*25.0*		*99*	*80-120*			
Matrix Spike Analyzed: 07/16/2005 (5G16003-MS1)					**Source: IOG0808-01**					
2-Chloroethyl vinyl ether	27.1	5.0	ug/l	25.0	ND	108	25-170			
Surrogate: Dibromofluoromethane	*24.7*		*ug/l*	*25.0*		*99*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/l*	*25.0*		*99*	*80-120*			
Matrix Spike Dup Analyzed: 07/16/2005 (5G16003-MSD1)					**Source: IOG0808-01**					
2-Chloroethyl vinyl ether	28.2	5.0	ug/l	25.0	ND	113	25-170	4	25	
Surrogate: Dibromofluoromethane	*25.3*		*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: Toluene-d8	*25.8*		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/l*	*25.0*		*98*	*80-120*			

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Attention: Deborah Foster

Project ID: TIO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Blank Analyzed: 07/21/2005 (5G21019-BLK1)										
Benzene	ND	2.0	ug/l							
Bromobenzene	ND	5.0	ug/l							
Bromochloromethane	ND	5.0	ug/l							
Bromodichloromethane	ND	2.0	ug/l							
Bromoform	ND	5.0	ug/l							
Bromomethane	ND	5.0	ug/l							
n-Butylbenzene	ND	5.0	ug/l							
sec-Butylbenzene	ND	5.0	ug/l							
tert-Butylbenzene	ND	5.0	ug/l							
Carbon Disulfide	ND	5.0	ug/l							
Carbon tetrachloride	ND	5.0	ug/l							
Chlorobenzene	ND	2.0	ug/l							
Chloroethane	ND	5.0	ug/l							
Chloroform	ND	2.0	ug/l							
Chloromethane	ND	5.0	ug/l							
2-Chlorotoluene	ND	5.0	ug/l							
4-Chlorotoluene	ND	5.0	ug/l							
Dibromochloromethane	ND	2.0	ug/l							
1,2-Dibromo-3-chloropropane	ND	5.0	ug/l							
1,2-Dibromoethane (EDB)	ND	2.0	ug/l							
Dibromomethane	ND	2.0	ug/l							
1,2-Dichlorobenzene	ND	2.0	ug/l							
1,3-Dichlorobenzene	ND	2.0	ug/l							
1,4-Dichlorobenzene	ND	2.0	ug/l							
Dichlorodifluoromethane	ND	5.0	ug/l							
1,1-Dichloroethane	ND	2.0	ug/l							
1,2-Dichloroethane	ND	2.0	ug/l							
1,1-Dichloroethene	ND	5.0	ug/l							
cis-1,2-Dichloroethene	ND	2.0	ug/l							
trans-1,2-Dichloroethene	ND	2.0	ug/l							
1,2-Dichloropropane	ND	2.0	ug/l							
1,3-Dichloropropane	ND	2.0	ug/l							
2,2-Dichloropropane	ND	2.0	ug/l							
1,1-Dichloropropene	ND	2.0	ug/l							
cis-1,3-Dichloropropene	ND	2.0	ug/l							

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Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Blank Analyzed: 07/21/2005 (5G21019-BLK1)										
trans-1,3-Dichloropropene	ND	2.0	ug/l							
Ethylbenzene	ND	2.0	ug/l							
Hexachlorobutadiene	ND	5.0	ug/l							
Isopropylbenzene	ND	2.0	ug/l							
p-Isopropyltoluene	ND	2.0	ug/l							
Methylene chloride	ND	5.0	ug/l							
Naphthalene	ND	5.0	ug/l							
n-Propylbenzene	ND	2.0	ug/l							
Styrene	ND	2.0	ug/l							
1,1,1,2-Tetrachloroethane	ND	5.0	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	ug/l							
Tetrachloroethene	ND	2.0	ug/l							
Toluene	ND	2.0	ug/l							
1,2,3-Trichlorobenzene	ND	5.0	ug/l							
1,2,4-Trichlorobenzene	ND	5.0	ug/l							
1,1,1-Trichloroethane	ND	2.0	ug/l							
1,1,2-Trichloroethane	ND	2.0	ug/l							
Trichloroethene	ND	2.0	ug/l							
Trichlorofluoromethane	ND	5.0	ug/l							
1,2,3-Trichloropropane	ND	10	ug/l							
1,2,4-Trimethylbenzene	ND	2.0	ug/l							
1,3,5-Trimethylbenzene	ND	2.0	ug/l							
Vinyl acetate	ND	5.0	ug/l							
Vinyl chloride	ND	5.0	ug/l							
o-Xylene	ND	2.0	ug/l							
m,p-Xylenes	ND	2.0	ug/l							
Surrogate: Dibromofluoromethane	*24.8*		*ug/l*	*25.0*		*99*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.7*		*ug/l*	*25.0*		*95*	*80-120*			

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METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
LCS Analyzed: 07/21/2005 (5G21019-BS1)										
Benzene	20.3	2.0	ug/l	25.0		81	65-120			
Bromobenzene	21.5	5.0	ug/l	25.0		86	70-120			
Bromochloromethane	22.5	5.0	ug/l	25.0		90	65-130			
Bromodichloromethane	20.0	2.0	ug/l	25.0		80	65-135			
Bromoform	19.3	5.0	ug/l	25.0		77	50-130			
Bromomethane	19.4	5.0	ug/l	25.0		78	60-140			
n-Butylbenzene	20.9	5.0	ug/l	25.0		84	70-125			
sec-Butylbenzene	20.0	5.0	ug/l	25.0		80	70-125			
tert-Butylbenzene	20.8	5.0	ug/l	25.0		83	70-125			
Carbon Disulfide	20.9	5.0	ug/l	25.0		84	50-130			
Carbon tetrachloride	19.9	5.0	ug/l	25.0		80	65-140			
Chlorobenzene	20.5	2.0	ug/l	25.0		82	70-125			
Chloroethane	19.5	5.0	ug/l	25.0		78	55-140			
Chloroform	20.9	2.0	ug/l	25.0		84	65-130			
Chloromethane	16.6	5.0	ug/l	25.0		66	40-140			
2-Chlorotoluene	20.9	5.0	ug/l	25.0		84	70-125			
4-Chlorotoluene	20.8	5.0	ug/l	25.0		83	70-125			
Dibromochloromethane	21.4	2.0	ug/l	25.0		86	65-140			
1,2-Dibromo-3-chloropropane	20.2	5.0	ug/l	25.0		81	45-135			
1,2-Dibromoethane (EDB)	22.2	2.0	ug/l	25.0		89	70-125			
Dibromomethane	22.2	2.0	ug/l	25.0		89	65-130			
1,2-Dichlorobenzene	20.3	2.0	ug/l	25.0		81	70-120			
1,3-Dichlorobenzene	19.8	2.0	ug/l	25.0		79	70-125			
1,4-Dichlorobenzene	20.1	2.0	ug/l	25.0		80	70-125			
Dichlorodifluoromethane	13.5	5.0	ug/l	25.0		54	25-155			
1,1-Dichloroethane	21.4	2.0	ug/l	25.0		86	65-130			
1,2-Dichloroethane	20.6	2.0	ug/l	25.0		82	60-140			
1,1-Dichloroethene	20.8	5.0	ug/l	25.0		83	70-130			
cis-1,2-Dichloroethene	20.5	2.0	ug/l	25.0		82	65-125			
trans-1,2-Dichloroethene	20.8	2.0	ug/l	25.0		83	65-130			
1,2-Dichloropropane	21.6	2.0	ug/l	25.0		86	65-125			
1,3-Dichloropropane	22.0	2.0	ug/l	25.0		88	65-125			
2,2-Dichloropropane	21.8	2.0	ug/l	25.0		87	60-145			
1,1-Dichloropropene	20.1	2.0	ug/l	25.0		80	70-130			
cis-1,3-Dichloropropene	21.6	2.0	ug/l	25.0		86	70-130			

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P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
LCS Analyzed: 07/21/2005 (5G21019-BS1)										
trans-1,3-Dichloropropene	21.9	2.0	ug/l	25.0		88	65-135			
Ethylbenzene	20.6	2.0	ug/l	25.0		82	70-125			
Hexachlorobutadiene	17.0	5.0	ug/l	25.0		68	60-135			
Isopropylbenzene	22.5	2.0	ug/l	25.0		90	70-125			
p-Isopropyltoluene	19.2	2.0	ug/l	25.0		77	70-125			
Methylene chloride	22.6	5.0	ug/l	25.0		90	60-130			
Naphthalene	20.3	5.0	ug/l	25.0		81	55-140			
n-Propylbenzene	21.9	2.0	ug/l	25.0		88	70-125			
Styrene	22.4	2.0	ug/l	25.0		90	70-130			
1,1,1,2-Tetrachloroethane	21.0	5.0	ug/l	25.0		84	70-135			
1,1,2,2-Tetrachloroethane	25.8	2.0	ug/l	25.0		103	55-130			
Tetrachloroethene	19.4	2.0	ug/l	25.0		78	65-125			
Toluene	21.2	2.0	ug/l	25.0		85	70-125			
1,2,3-Trichlorobenzene	19.5	5.0	ug/l	25.0		78	60-130			
1,2,4-Trichlorobenzene	19.5	5.0	ug/l	25.0		78	65-135			
1,1,1-Trichloroethane	21.0	2.0	ug/l	25.0		84	65-135			
1,1,2-Trichloroethane	22.5	2.0	ug/l	25.0		90	65-125			
Trichloroethene	19.8	2.0	ug/l	25.0		79	70-125			
Trichlorofluoromethane	18.3	5.0	ug/l	25.0		73	60-140			
1,2,3-Trichloropropane	24.5	10	ug/l	25.0		98	55-130			
1,2,4-Trimethylbenzene	19.6	2.0	ug/l	25.0		78	70-125			
1,3,5-Trimethylbenzene	21.0	2.0	ug/l	25.0		84	70-125			
Vinyl acetate	15.6	5.0	ug/l	25.0		62	45-145			
Vinyl chloride	17.6	5.0	ug/l	25.0		70	50-130			
o-Xylene	20.4	2.0	ug/l	25.0		82	70-125			
m,p-Xylenes	40.0	2.0	ug/l	50.0		80	70-125			
Surrogate: Dibromofluoromethane	25.6		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: Toluene-d8	25.7		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	24.7		*ug/l*	*25.0*		*99*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Analyzed: 07/21/2005 (5G21019-MS1)					**Source: IOG0857-01**					
Benzene	25.1	2.0	ug/l	25.0	ND	100	65-125			
Bromobenzene	25.4	5.0	ug/l	25.0	ND	102	65-125			
Bromochloromethane	27.3	5.0	ug/l	25.0	ND	109	65-135			
Bromodichloromethane	24.6	2.0	ug/l	25.0	ND	98	65-135			
Bromoform	23.0	5.0	ug/l	25.0	2.6	82	50-135			
Bromomethane	25.2	5.0	ug/l	25.0	ND	101	50-145			
n-Butylbenzene	25.7	5.0	ug/l	25.0	ND	103	65-135			
sec-Butylbenzene	24.3	5.0	ug/l	25.0	ND	97	65-125			
tert-Butylbenzene	25.0	5.0	ug/l	25.0	ND	100	65-130			
Carbon Disulfide	23.4	5.0	ug/l	25.0	ND	94	40-140			
Carbon tetrachloride	25.1	5.0	ug/l	25.0	ND	100	65-140			
Chlorobenzene	25.0	2.0	ug/l	25.0	ND	100	75-125			
Chloroethane	24.9	5.0	ug/l	25.0	ND	100	50-140			
Chloroform	25.6	2.0	ug/l	25.0	ND	102	65-135			
Chloromethane	20.5	5.0	ug/l	25.0	ND	82	35-140			
2-Chlorotoluene	24.9	5.0	ug/l	25.0	ND	100	65-135			
4-Chlorotoluene	25.6	5.0	ug/l	25.0	ND	102	65-135			
Dibromochloromethane	26.2	2.0	ug/l	25.0	ND	105	60-140			
1,2-Dibromo-3-chloropropane	25.5	5.0	ug/l	25.0	ND	102	45-155			
1,2-Dibromoethane (EDB)	26.5	2.0	ug/l	25.0	ND	106	65-130			
Dibromomethane	26.1	2.0	ug/l	25.0	ND	104	65-135			
1,2-Dichlorobenzene	24.6	2.0	ug/l	25.0	ND	98	75-125			
1,3-Dichlorobenzene	24.2	2.0	ug/l	25.0	ND	97	75-125			
1,4-Dichlorobenzene	24.4	2.0	ug/l	25.0	ND	98	75-125			
Dichlorodifluoromethane	18.4	5.0	ug/l	25.0	ND	74	15-155			
1,1-Dichloroethane	26.3	2.0	ug/l	25.0	ND	105	65-130			
1,2-Dichloroethane	24.9	2.0	ug/l	25.0	ND	100	60-140			
1,1-Dichloroethene	25.3	5.0	ug/l	25.0	ND	101	60-135			
cis-1,2-Dichloroethene	25.2	2.0	ug/l	25.0	ND	101	60-130			
trans-1,2-Dichloroethene	25.8	2.0	ug/l	25.0	ND	103	60-135			
1,2-Dichloropropane	26.1	2.0	ug/l	25.0	ND	104	70-125			
1,3-Dichloropropane	26.1	2.0	ug/l	25.0	ND	104	60-135			
2,2-Dichloropropane	27.8	2.0	ug/l	25.0	ND	111	60-145			
1,1-Dichloropropene	24.9	2.0	ug/l	25.0	ND	100	65-125			
cis-1,3-Dichloropropene	26.0	2.0	ug/l	25.0	ND	104	65-135			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Batch: 5G21019 Extracted: 07/21/05

Matrix Spike Analyzed: 07/21/2005 (5G21019-MS1) **Source: IOG0857-01**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
trans-1,3-Dichloropropene	25.9	2.0	ug/l	25.0	ND	104	65-140			
Ethylbenzene	25.1	2.0	ug/l	25.0	ND	100	65-130			
Hexachlorobutadiene	20.6	5.0	ug/l	25.0	ND	82	50-135			
Isopropylbenzene	26.2	2.0	ug/l	25.0	ND	105	65-130			
p-Isopropyltoluene	23.2	2.0	ug/l	25.0	ND	93	65-125			
Methylene chloride	28.1	5.0	ug/l	25.0	ND	112	55-130			
Naphthalene	22.9	5.0	ug/l	25.0	ND	92	45-145			
n-Propylbenzene	25.9	2.0	ug/l	25.0	ND	104	65-130			
Styrene	16.4	2.0	ug/l	25.0	ND	66	45-145			
1,1,1,2-Tetrachloroethane	25.6	5.0	ug/l	25.0	ND	102	65-140			
1,1,2,2-Tetrachloroethane	28.9	2.0	ug/l	25.0	ND	116	55-140			
Tetrachloroethene	24.5	2.0	ug/l	25.0	ND	98	60-130			
Toluene	25.5	2.0	ug/l	25.0	ND	102	65-125			
1,2,3-Trichlorobenzene	22.8	5.0	ug/l	25.0	ND	91	55-125			
1,2,4-Trichlorobenzene	23.6	5.0	ug/l	25.0	ND	94	60-135			
1,1,1-Trichloroethane	24.9	2.0	ug/l	25.0	ND	100	65-140			
1,1,2-Trichloroethane	26.2	2.0	ug/l	25.0	ND	105	60-130			
Trichloroethene	24.3	2.0	ug/l	25.0	ND	97	60-125			
Trichlorofluoromethane	23.2	5.0	ug/l	25.0	ND	93	55-145			
1,2,3-Trichloropropane	27.8	10	ug/l	25.0	ND	111	50-135			
1,2,4-Trimethylbenzene	23.5	2.0	ug/l	25.0	ND	94	55-130			
1,3,5-Trimethylbenzene	25.0	2.0	ug/l	25.0	ND	100	65-130			
Vinyl acetate	19.8	5.0	ug/l	25.0	ND	79	40-150			
Vinyl chloride	19.2	5.0	ug/l	25.0	ND	77	40-135			
o-Xylene	24.5	2.0	ug/l	25.0	ND	98	60-125			
m,p-Xylenes	48.8	2.0	ug/l	50.0	ND	98	60-130			
Surrogate: Dibromofluoromethane	*25.0*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*25.7*		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.6*		*ug/l*	*25.0*		*98*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Batch: 5G21019 Extracted: 07/21/05

Matrix Spike Dup Analyzed: 07/21/2005 (5G21019-MSD1) **Source: IOG0857-01**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Benzene	23.8	2.0	ug/l	25.0	ND	95	60-125	5	20	
Bromobenzene	23.3	5.0	ug/l	25.0	ND	93	65-125	9	20	
Bromochloromethane	26.0	5.0	ug/l	25.0	ND	104	60-135	8	25	
Bromodichloromethane	22.7	2.0	ug/l	25.0	ND	91	65-135	8	20	
Bromoform	22.5	5.0	ug/l	25.0	2.6	80	50-135	2	25	
Bromomethane	23.4	5.0	ug/l	25.0	ND	94	50-145	7	25	
n-Butylbenzene	[illegible]	5.0	ug/l	25.0	ND	[illegible]	65-125	3	20	
sec-Butylbenzene	23.6	5.0	ug/l	25.0	ND	94	65-125	3	20	
tert-Butylbenzene	24.0	5.0	ug/l	25.0	ND	96	65-130	4	20	
Carbon Disulfide	23.8	5.0	ug/l	25.0	ND	95	40-145	2	25	
Carbon tetrachloride	23.6	5.0	ug/l	25.0	ND	94	65-140	6	25	
Chlorobenzene	23.7	2.0	ug/l	25.0	ND	95	70-125	5	20	
Chloroethane	23.5	5.0	ug/l	25.0	ND	94	50-140	6	25	
Chloroform	24.5	2.0	ug/l	25.0	ND	98	65-135	4	20	
Chloromethane	19.4	5.0	ug/l	25.0	ND	78	35-140	6	25	
2-Chlorotoluene	23.2	5.0	ug/l	25.0	ND	93	65-135	7	20	
4-Chlorotoluene	23.3	5.0	ug/l	25.0	ND	93	65-135	7	20	
Dibromochloromethane	24.8	2.0	ug/l	25.0	ND	99	65-140	2	25	
1,2-Dibromo-3-chloropropane	23.8	5.0	ug/l	25.0	ND	95	40-150	7	30	
1,2-Dibromoethane (EDB)	25.2	2.0	ug/l	25.0	ND	101	65-130	5	25	
Dibromomethane	25.0	2.0	ug/l	25.0	ND	100	60-135	4	25	
1,2-Dichlorobenzene	23.6	2.0	ug/l	25.0	ND	94	70-125	4	20	
1,3-Dichlorobenzene	22.9	2.0	ug/l	25.0	ND	92	70-125	6	20	
1,4-Dichlorobenzene	23.0	2.0	ug/l	25.0	ND	92	70-125	6	20	
Dichlorodifluoromethane	17.4	5.0	ug/l	25.0	ND	70	15-155	6	30	
1,1-Dichloroethane	25.2	2.0	ug/l	25.0	ND	101	60-130	4	20	
1,2-Dichloroethane	23.3	2.0	ug/l	25.0	ND	93	60-140	7	20	
1,1-Dichloroethene	23.7	5.0	ug/l	25.0	ND	95	60-135	7	20	
cis-1,2-Dichloroethene	24.1	2.0	ug/l	25.0	ND	96	60-130	4	20	
trans-1,2-Dichloroethene	24.5	2.0	ug/l	25.0	ND	98	60-135	4	20	
1,2-Dichloropropane	24.6	2.0	ug/l	25.0	ND	98	60-125	6	20	
1,3-Dichloropropane	25.2	2.0	ug/l	25.0	ND	101	60-135	4	25	
2,2-Dichloropropane	26.5	2.0	ug/l	25.0	ND	104	60-145	2	25	
1,1-Dichloropropene	23.4	2.0	ug/l	25.0	ND	94	65-135	[illegible]	20	
cis-1,3-Dichloropropene	24.1	2.0	ug/l	25.0	ND	96	65-135	8	20	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Dup Analyzed: 07/21/2005 (5G21019-MSD1)					**Source: IOG0857-01**					
trans-1,3-Dichloropropene	24.1	2.0	ug/l	25.0	ND	96	65-140	7	25	
Ethylbenzene	23.8	2.0	ug/l	25.0	ND	95	65-130	5	20	
Hexachlorobutadiene	21.0	5.0	ug/l	25.0	ND	84	60-135	1	20	
Isopropylbenzene	24.8	2.0	ug/l	25.0	ND	99	65-130	5	20	
p-Isopropyltoluene	22.6	2.0	ug/l	25.0	ND	90	65-125	3	20	
Methylene chloride	26.4	5.0	ug/l	25.0	ND	106	55-130	6	20	
Naphthalene	24.6	5.0	ug/l	25.0	ND	98	45-145	7	30	
n-Propylbenzene	24.4	2.0	ug/l	25.0	ND	98	65-130	6	20	
Styrene	14.0	2.0	ug/l	25.0	ND	56	45-145	10	30	
1,1,1,2-Tetrachloroethane	24.2	5.0	ug/l	25.0	ND	97	65-140	6	20	
1,1,2,2-Tetrachloroethane	28.7	2.0	ug/l	25.0	ND	115	55-140	1	30	
Tetrachloroethene	23.3	2.0	ug/l	25.0	ND	93	60-130	5	20	
Toluene	23.9	2.0	ug/l	25.0	ND	96	65-125	6	20	
1,2,3-Trichlorobenzene	23.5	5.0	ug/l	25.0	ND	94	55-135	3	20	
1,2,4-Trichlorobenzene	23.6	5.0	ug/l	25.0	ND	94	60-135	3	20	
1,1,1-Trichloroethane	24.3	2.0	ug/l	25.0	ND	97	65-140	2	20	
1,1,2-Trichloroethane	25.1	2.0	ug/l	25.0	ND	100	70-125	5	25	
Trichloroethene	22.5	2.0	ug/l	25.0	ND	90	60-125	8	20	
Trichlorofluoromethane	21.8	5.0	ug/l	25.0	ND	87	55-145	6	25	
1,2,3-Trichloropropane	27.0	10	ug/l	25.0	ND	108	50-135	3	30	
1,2,4-Trimethylbenzene	22.3	2.0	ug/l	25.0	ND	89	55-130	5	25	
1,3,5-Trimethylbenzene	23.6	2.0	ug/l	25.0	ND	94	65-130	6	20	
Vinyl acetate	19.9	5.0	ug/l	25.0	ND	80	40-150	1	30	
Vinyl chloride	18.2	5.0	ug/l	25.0	ND	73	40-135	8	30	
o-Xylene	23.1	2.0	ug/l	25.0	ND	92	60-125	6	20	
m,p-Xylenes	46.6	2.0	ug/l	50.0	ND	93	60-130	5	25	
Surrogate: Dibromofluoromethane	*24.9*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*25.2*		*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.8*		*ug/l*	*25.0*		*99*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
Acenaphthene	ND	10	ug/l							
Acenaphthylene	ND	10	ug/l							
Aniline	ND	10	ug/l							
Anthracene	ND	10	ug/l							
Benzidine	ND	20	ug/l							
Benzoic acid	ND	20	ug/l							
Benzo(a)anthracene	ND	10	ug/l							
Benzo(b)fluoranthene	ND	10	ug/l							
Benzo(k)fluoranthene	ND	10	ug/l							
Benzo(g,h,i)perylene	ND	10	ug/l							
Benzo(a)pyrene	ND	10	ug/l							
Benzyl alcohol	ND	20	ug/l							
Bis(2-chloroethoxy)methane	ND	10	ug/l							
Bis(2-chloroethyl)ether	ND	10	ug/l							
Bis(2-chloroisopropyl)ether	ND	10	ug/l							
Bis(2-ethylhexyl)phthalate	ND	50	ug/l							
4-Bromophenyl phenyl ether	ND	10	ug/l							
Butyl benzyl phthalate	ND	20	ug/l							
4-Chloroaniline	ND	10	ug/l							
2-Chloronaphthalene	ND	10	ug/l							
4-Chloro-3-methylphenol	ND	20	ug/l							
2-Chlorophenol	ND	10	ug/l							
4-Chlorophenyl phenyl ether	ND	10	ug/l							
Chrysene	ND	10	ug/l							
Dibenz(a,h)anthracene	ND	20	ug/l							
Dibenzofuran	ND	10	ug/l							
Di-n-butyl phthalate	ND	20	ug/l							
1,3-Dichlorobenzene	ND	10	ug/l							
1,4-Dichlorobenzene	ND	10	ug/l							
1,2-Dichlorobenzene	ND	10	ug/l							
3,3-Dichlorobenzidine	ND	20	ug/l							
2,4-Dichlorophenol	ND	10	ug/l							
Diethyl phthalate	ND	10	ug/l							
2,4-Dimethylphenol	ND	20	ug/l							
Dimethyl phthalate	ND	10	ug/l							

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
4,6-Dinitro-2-methylphenol	ND	20	ug/l							
2,4-Dinitrophenol	ND	20	ug/l							
2,4-Dinitrotoluene	ND	10	ug/l							
2,6-Dinitrotoluene	ND	10	ug/l							
Di-n-octyl phthalate	ND	20	ug/l							
Fluoranthene	ND	10	ug/l							
Fluorene	ND	10	ug/l							
Hexachlorobenzene	ND	10	ug/l							
Hexachlorobutadiene	ND	10	ug/l							
Hexachlorocyclopentadiene	ND	20	ug/l							
Hexachloroethane	ND	10	ug/l							
Indeno(1,2,3-cd)pyrene	ND	20	ug/l							
Isophorone	ND	10	ug/l							
2-Methylnaphthalene	ND	10	ug/l							
2-Methylphenol	ND	10	ug/l							
4-Methylphenol	ND	10	ug/l							
Naphthalene	ND	10	ug/l							
2-Nitroaniline	ND	20	ug/l							
3-Nitroaniline	ND	20	ug/l							
4-Nitroaniline	ND	20	ug/l							
Nitrobenzene	ND	20	ug/l							
2-Nitrophenol	ND	10	ug/l							
4-Nitrophenol	ND	20	ug/l							
N-Nitrosodiphenylamine	ND	10	ug/l							
N-Nitroso-di-n-propylamine	ND	10	ug/l							
Pentachlorophenol	ND	20	ug/l							
Phenanthrene	ND	10	ug/l							
Phenol	ND	10	ug/l							
Pyrene	ND	10	ug/l							
1,2,4-Trichlorobenzene	ND	10	ug/l							
2,4,5-Trichlorophenol	ND	20	ug/l							
2,4,6-Trichlorophenol	ND	20	ug/l							
N-Nitrosodimethylamine	ND	20	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	20	ug/l							
Surrogate: 2-Fluorophenol	*127*		*ug/l*	*200*		*64*	*30-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
Surrogate: Phenol-d6	*137*		*ug/l*	*200*		*68*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*164*		*ug/l*	*200*		*82*	*45-120*			
Surrogate: Nitrobenzene-d5	*71.7*		*ug/l*	*100*		*72*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*77.0*		*ug/l*	*100*		*77*	*45-120*			
Surrogate: Terphenyl-d14	*78.7*		*ug/l*	*100*		*79*	*45-120*			
LCS Analyzed: 07/20/2005 (5G17017-BS1)										M-NR1
Acenaphthene	86.7	10	ug/l	100		87	55-120			
Acenaphthylene	89.0	10	ug/l	100		89	55-120			
Aniline	81.3	10	ug/l	100		81	35-120			
Anthracene	79.9	10	ug/l	100		80	55-120			
Benzidine	173	20	ug/l	100		173	20-160			L
Benzoic acid	69.9	20	ug/l	100		70	35-120			
Benzo(a)anthracene	81.7	10	ug/l	100		82	60-120			
Benzo(b)fluoranthene	89.1	10	ug/l	100		89	50-120			
Benzo(k)fluoranthene	89.2	10	ug/l	100		89	50-125			
Benzo(g,h,i)perylene	93.7	10	ug/l	100		94	40-125			
Benzo(a)pyrene	77.1	10	ug/l	100		77	55-120			
Benzyl alcohol	58.4	20	ug/l	100		58	45-120			
Bis(2-chloroethoxy)methane	84.1	10	ug/l	100		84	55-120			
Bis(2-chloroethyl)ether	83.6	10	ug/l	100		84	50-120			
Bis(2-chloroisopropyl)ether	84.8	10	ug/l	100		85	45-120			
Bis(2-ethylhexyl)phthalate	55.4	50	ug/l	100		55	65-130			
4-Bromophenyl phenyl ether	85.3	10	ug/l	100		85	50-120			
Butyl benzyl phthalate	85.2	20	ug/l	100		85	55-125			
4-Chloroaniline	73.4	10	ug/l	100		73	50-120			
2-Chloronaphthalene	79.5	10	ug/l	100		80	55-120			
4-Chloro-3-methylphenol	84.0	20	ug/l	100		84	60-120			
2-Chlorophenol	77.6	10	ug/l	100		78	45-120			
4-Chlorophenyl phenyl ether	89.9	10	ug/l	100		90	55-120			
Chrysene	86.6	10	ug/l	100		87	60-120			
Dibenz(a,h)anthracene	96.1	20	ug/l	100		96	45-130			
Dibenzofuran	85.1	10	ug/l	100		85	60-120			
Di-n-butyl phthalate	79.3	20	ug/l	100		79	55-125			
1,3-Dichlorobenzene	74.2	10	ug/l	100		74	35-120			
1,4-Dichlorobenzene	72.9	10	ug/l	100		73	35-120			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Analyzed: 07/20/2005 (5G17017-BS1)										M-NR1
1,2-Dichlorobenzene	74.8	10	ug/l	100		75	35-120			
3,3-Dichlorobenzidine	90.4	20	ug/l	100		90	45-130			
2,4-Dichlorophenol	77.7	10	ug/l	100		78	55-120			
Diethyl phthalate	86.1	10	ug/l	100		86	55-120			
2,4-Dimethylphenol	63.8	20	ug/l	100		64	30-120			
Dimethyl phthalate	84.3	10	ug/l	100		84	60-120			
4,6-Dinitro-2-methylphenol	85.2	20	ug/l	100		85	55-120			
2,4-Dinitrophenol	89.2	20	ug/l	100		89	40-120			
2,4-Dinitrotoluene	93.9	10	ug/l	100		94	60-120			
2,6-Dinitrotoluene	81.3	10	ug/l	100		81	60-120			
Di-n-octyl phthalate	84.2	20	ug/l	100		84	65-135			
Fluoranthene	82.0	10	ug/l	100		82	55-120			
Fluorene	89.0	10	ug/l	100		89	60-120			
Hexachlorobenzene	85.7	10	ug/l	100		86	50-120			
Hexachlorobutadiene	76.7	10	ug/l	100		77	40-120			
Hexachlorocyclopentadiene	90.5	20	ug/l	100		90	15-120			
Hexachloroethane	76.3	10	ug/l	100		76	35-120			
Indeno(1,2,3-cd)pyrene	90.9	20	ug/l	100		91	40-130			
Isophorone	82.6	10	ug/l	100		83	50-120			
2-Methylnaphthalene	81.0	10	ug/l	100		81	50-120			
2-Methylphenol	79.4	10	ug/l	100		79	45-120			
4-Methylphenol	80.8	10	ug/l	100		81	45-120			
Naphthalene	78.8	10	ug/l	100		79	50-120			
2-Nitroaniline	84.6	20	ug/l	100		85	60-120			
3-Nitroaniline	94.0	20	ug/l	100		94	55-120			
4-Nitroaniline	93.5	20	ug/l	100		94	55-125			
Nitrobenzene	79.1	20	ug/l	100		79	50-120			
2-Nitrophenol	82.1	10	ug/l	100		82	55-120			
4-Nitrophenol	78.4	20	ug/l	100		78	45-120			
N-Nitrosodiphenylamine	89.3	10	ug/l	100		89	55-120			
N-Nitroso-di-n-propylamine	88.8	10	ug/l	100		89	45-120			
Pentachlorophenol	91.4	20	ug/l	100		91	50-120			
Phenanthrene	87.2	10	ug/l	100		87	55-120			
Phenol	77.8	10	ug/l	100		78	45-120			
Pyrene	87.4	10	ug/l	100		87	50-120			

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Analyzed: 07/20/2005 (5G17017-BS1)										M-NR1
1,2,4-Trichlorobenzene	75.1	10	ug/l	100		75	45-120			
2,4,5-Trichlorophenol	89.1	20	ug/l	100		89	60-120			
2,4,6-Trichlorophenol	80.8	20	ug/l	100		81	60-120			
N-Nitrosodimethylamine	84.9	20	ug/l	100		85	40-120			
1,2-Diphenylhydrazine/Azobenzene	86.6	20	ug/l	100		87	60-120			
Surrogate: 2-Fluorophenol	*148*		*ug/l*	*200*		*74*	*30-120*			
Surrogate: Phenol-d6	*161*		*ug/l*	*200*		*81*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*181*		*ug/l*	*200*		*90*	*45-120*			
Surrogate: Nitrobenzene-d5	*80.3*		*ug/l*	*100*		*80*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*81.7*		*ug/l*	*100*		*82*	*45-120*			
Surrogate: Terphenyl-d14	*86.2*		*ug/l*	*100*		*86*	*45-120*			
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
Acenaphthene	84.0	10	ug/l	100		84	55-120	3	20	
Acenaphthylene	87.2	10	ug/l	100		87	55-120	2	20	
Aniline	76.7	10	ug/l	100		77	35-120	6	25	
Anthracene	80.8	10	ug/l	100		81	55-120	1	20	
Benzidine	49.1	20	ug/l	100		49	20-140	54	35	R-2
Benzoic acid	57.7	20	ug/l	100		58	35-120	23	30	
Benzo(a)anthracene	86.0	10	ug/l	100		86	60-120	5	20	
Benzo(b)fluoranthene	88.7	10	ug/l	100		89	50-120	6	25	
Benzo(k)fluoranthene	86.9	10	ug/l	100		87	50-120	3	20	
Benzo(g,h,i)perylene	94.7	10	ug/l	100		95	45-125	1	25	
Benzo(a)pyrene	79.8	10	ug/l	100		80	55-120	4	25	
Benzyl alcohol	60.6	20	ug/l	100		61	45-120	4	20	
Bis(2-chloroethoxy)methane	83.2	10	ug/l	100		83	55-120	1	20	
Bis(2-chloroethyl)ether	81.7	10	ug/l	100		82	50-120	2	20	
Bis(2-chloroisopropyl)ether	81.1	10	ug/l	100		81	45-120	4	20	
Bis(2-ethylhexyl)phthalate	85.2	50	ug/l	100		85	60-130	2	20	
4-Bromophenyl phenyl ether	87.8	10	ug/l	100		88	60-120	3	25	
Butyl benzyl phthalate	83.2	20	ug/l	100		83	55-125	2	20	
4-Chloroaniline	77.3	10	ug/l	100		77	50-120	1	25	
2-Chloronaphthalene	81.4	10	ug/l	100		81	55-120	2	20	
4-Chloro-3-methylphenol	77.2	20	ug/l	100		77	60-120	[illegible]	20	
2-Chlorophenol	74.5	10	ug/l	100		74	45-120	4	25	
4-Chlorophenyl phenyl ether	87.0	10	ug/l	100		87	55-120	3	20	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
Chrysene	87.1	10	ug/l	100		87	60-120	0	20	
Dibenz(a,h)anthracene	87.1	20	ug/l	100		87	45-120	1	25	
Dibenzofuran	83.3	10	ug/l	100		83	60-120	2	20	
Di-n-butyl phthalate	77.2	20	ug/l	100		77	55-125	1	20	
1,3-Dichlorobenzene	72.2	10	ug/l	100		72	35-120	3	25	
1,4-Dichlorobenzene	71.2	10	ug/l	100		71	35-120	4	25	
1,2-Dichlorobenzene	72.6	10	ug/l	100		73	35-120	3	25	
3,3-Dichlorobenzidine	89.1	20	ug/l	100		89	45-130	1	25	
2,4-Dichlorophenol	76.5	10	ug/l	100		76	55-120	2	20	
Diethyl phthalate	83.2	10	ug/l	100		83	55-120	3	20	
2,4-Dimethylphenol	[illegible]	20	ug/l	100		[illegible]	50-120	6	25	
Dimethyl phthalate	84.4	10	ug/l	100		84	60-120	0	20	
4,6-Dinitro-2-methylphenol	82.9	20	ug/l	100		83	50-120	3	25	
2,4-Dinitrophenol	86.7	20	ug/l	100		87	40-120	3	25	
2,4-Dinitrotoluene	[illegible]	10	ug/l	100		[illegible]	60-120	4	20	
2,6-Dinitrotoluene	83.0	10	ug/l	100		83	60-120	2	20	
Di-n-octyl phthalate	87.3	20	ug/l	100		87	60-130	4	20	
Fluoranthene	79.8	10	ug/l	100		80	55-120	3	20	
Fluorene	85.8	10	ug/l	100		86	60-120	4	20	
Hexachlorobenzene	89.2	10	ug/l	100		89	50-120	4	20	
Hexachlorobutadiene	74.9	10	ug/l	100		75	40-120	2	25	
Hexachlorocyclopentadiene	58.4	20	ug/l	100		58	15-120	2	30	
Hexachloroethane	73.3	10	ug/l	100		73	35-120	4	25	
Indeno(1,2,3-cd)pyrene	90.1	20	ug/l	100		90	40-130	0	25	
Isophorone	83.7	10	ug/l	100		84	50-120	1	20	
2-Methylnaphthalene	78.7	10	ug/l	100		79	50-120	3	20	
2-Methylphenol	76.8	10	ug/l	100		77	45-120	3	20	
4-Methylphenol	79.3	10	ug/l	100		79	45-120	2	20	
Naphthalene	78.3	10	ug/l	100		78	50-120	1	20	
2-Nitroaniline	83.5	20	ug/l	100		83	60-120	[illegible]	20	
3-Nitroaniline	[illegible]	20	ug/l	100		[illegible]	55-120	4	25	
4-Nitroaniline	87.8	20	ug/l	100		88	50-125	6	20	
Nitrobenzene	79.1	20	ug/l	100		79	50-120	0	25	
2-Nitrophenol	79.7	10	ug/l	100		80	55-120	3	25	
4-Nitrophenol	74.7	20	ug/l	100		75	45-120	5	25	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
N-Nitrosodiphenylamine	88.2	10	ug/l	100		88	55-120	2	20	
N-Nitroso-di-n-propylamine	86.8	10	ug/l	100		87	45-120	2	20	
Pentachlorophenol	94.4	20	ug/l	100		94	50-120	3	25	
Phenanthrene	79.7	10	ug/l	100		80	55-120	1	20	
Phenol	74.4	10	ug/l	100		74	45-120	4	25	
Pyrene	83.4	10	ug/l	100		83	50-120	5	25	
1,2,4-Trichlorobenzene	75.3	10	ug/l	100		75	45-120	0	20	
2,4,5-Trichlorophenol	88.5	20	ug/l	100		88	60-120	1	20	
2,4,6-Trichlorophenol	82.1	20	ug/l	100		82	60-120	2	20	
N-Nitrosodimethylamine	72.3	20	ug/l	100		72	40-120	16	20	
1,2-Diphenylhydrazine/Azobenzene	82.7	20	ug/l	100		83	60-120	5	25	
Surrogate: 2-Fluorophenol	*133*		*ug/l*	*200*		*66*	*30-120*			
Surrogate: Phenol-d6	*147*		*ug/l*	*200*		*74*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*181*		*ug/l*	*200*		*90*	*45-120*			
Surrogate: Nitrobenzene-d5	*79.2*		*ug/l*	*100*		*79*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*83.5*		*ug/l*	*100*		*84*	*45-120*			
Surrogate: Terphenyl-d14	*83.1*		*ug/l*	*100*		*83*	*45-120*			

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: D. Keith Foster

Project ID: LTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
Blank Analyzed: 07/20/2005-07/22/2005 (5G20057-BLK1)										
Aldrin	ND	0.10	ug/l							
alpha-BHC	ND	0.10	ug/l							
beta-BHC	ND	0.10	ug/l							
delta-BHC	ND	0.20	ug/l							
gamma-BHC (Lindane)	ND	0.10	ug/l							
Chlordane	ND	1.0	ug/l							
4,4'-DDD	ND	0.10	ug/l							
4,4'-DDE	ND	0.10	ug/l							
4,4'-DDT	ND	0.10	ug/l							
Dieldrin	ND	0.10	ug/l							
Endosulfan I	ND	0.10	ug/l							
Endosulfan II	ND	0.10	ug/l							
Endosulfan sulfate	ND	0.20	ug/l							
Endrin	ND	0.10	ug/l							
Endrin aldehyde	ND	0.10	ug/l							
Endrin ketone	ND	0.10	ug/l							
Heptachlor	ND	0.10	ug/l							
Heptachlor epoxide	ND	0.10	ug/l							
Methoxychlor	ND	0.10	ug/l							
Toxaphene	ND	5.0	ug/l							
Surrogate: Tetrachloro-m-xylene	*0.352*		*ug/l*	*0.500*		*70*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.44[illegible]*		*ug/l*	*0.500*		*89*	*45-120*			
LCS Analyzed: 07/20/2005 (5G20057-BS1)										M-NR1
Aldrin	0.354	0.10	ug/l	0.500		71	40-115			
alpha-BHC	0.435	0.10	ug/l	0.500		87	45-115			
beta-BHC	0.397	0.10	ug/l	0.500		79	50-115			
delta-BHC	0.447	0.20	ug/l	0.500		89	55-120			
gamma-BHC (Lindane)	0.431	0.10	ug/l	0.500		86	45-115			
4,4'-DDD	0.462	0.10	ug/l	0.500		92	55-120			
4,4'-DDE	0.44[illegible]	0.10	ug/l	0.500		89	50-120			
4,4'-DDT	0.443	0.10	ug/l	0.500		89	55-120			
Dieldrin	0.437	0.10	ug/l	0.500		87	55-120			
Endosulfan I	0.417	0.10	ug/l	0.500		83	50-115			
Endosulfan II	0.433	0.10	ug/l	0.500		87	55-125			
Endosulfan sulfate	0.47[illegible]	0.20	ug/l	0.500		94	60-120			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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P.O. Box 3308
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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
LCS Analyzed: 07/20/2005 (5G20057-BS1)										M-NR1
Endrin	0.441	0.10	ug/l	0.500		88	55-125			
Endrin aldehyde	0.443	0.10	ug/l	0.500		89	55-115			
Endrin ketone	0.441	0.10	ug/l	0.500		88	60-115			
Heptachlor	0.370	0.10	ug/l	0.500		74	45-115			
Heptachlor epoxide	0.416	0.10	ug/l	0.500		83	50-115			
Methoxychlor	0.454	0.10	ug/l	0.500		91	60-120			
Surrogate: Tetrachloro-m-xylene	*0.338*		*ug/l*	*0.500*		*68*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.439*		*ug/l*	*0.500*		*88*	*45-120*			
LCS Dup Analyzed: 07/20/2005 (5G20057-BSD1)										
Aldrin	0.341	0.10	ug/l	0.500		68	40-115	4	30	
alpha-BHC	0.422	0.10	ug/l	0.500		84	45-115	3	30	
beta-BHC	0.386	0.10	ug/l	0.500		77	50-115	3	30	
delta-BHC	0.433	0.20	ug/l	0.500		87	55-120	3	30	
gamma-BHC (Lindane)	0.419	0.10	ug/l	0.500		84	45-115	3	30	
4,4'-DDD	0.439	0.10	ug/l	0.500		88	60-120	5	30	
4,4'-DDE	0.425	0.10	ug/l	0.500		85	55-120	5	30	
4,4'-DDT	0.420	0.10	ug/l	0.500		84	60-120	5	30	
Dieldrin	0.417	0.10	ug/l	0.500		83	55-120	5	30	
Endosulfan I	0.398	0.10	ug/l	0.500		80	50-115	5	30	
Endosulfan II	0.411	0.10	ug/l	0.500		82	60-125	5	30	
Endosulfan sulfate	0.445	0.20	ug/l	0.500		89	60-120	6	30	
Endrin	0.421	0.10	ug/l	0.500		84	55-125	5	30	
Endrin aldehyde	0.379	0.10	ug/l	0.500		76	55-115	16	30	
Endrin ketone	0.415	0.10	ug/l	0.500		83	60-115	6	30	
Heptachlor	0.356	0.10	ug/l	0.500		71	45-115	4	30	
Heptachlor epoxide	0.400	0.10	ug/l	0.500		80	50-115	4	30	
Methoxychlor	0.430	0.10	ug/l	0.500		86	60-120	5	30	
Surrogate: Tetrachloro-m-xylene	*0.337*		*ug/l*	*0.500*		*67*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.410*		*ug/l*	*0.500*		*82*	*45-120*			

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P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

POLYCHLORINATED BIPHENYLS (EPA 3510C/8082)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
Blank Analyzed: 07/20/2005-07/22/2005 (5G20057-BLK1)										
Aroclor 1016	ND	1.0	ug/l							
Aroclor 1221	ND	1.0	ug/l							
Aroclor 1232	ND	1.0	ug/l							
Aroclor 1242	ND	1.0	ug/l							
Aroclor 1248	ND	1.0	ug/l							
Aroclor 1254	ND	1.0	ug/l							
Aroclor 1260	ND	1.0	ug/l							
Surrogate: Decachlorobiphenyl	*0.513*		*ug/l*	*0.500*		*103*	*45-120*			
LCS Analyzed: 07/22/2005 (5G20057-BS2)										M-NR1
Aroclor 1016	3.93	1.0	ug/l	4.00		98	50-115			
Aroclor 1260	3.67	1.0	ug/l	4.00		92	55-115			
Surrogate: Decachlorobiphenyl	*0.521*		*ug/l*	*0.500*		*104*	*45-120*			
LCS Dup Analyzed: 07/22/2005 (5G20057-BSD2)										
Aroclor 1016	3.23	1.0	ug/l	4.00		81	50-115	8	30	
Aroclor 1260	3.37	1.0	ug/l	4.00		84	55-115	9	25	
Surrogate: Decachlorobiphenyl	*0.479*		*ug/l*	*0.500*		*96*	*45-120*			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G18097 Extracted: 07/18/05										
Blank Analyzed: 07/19/2005 (5G18097-BLK1)										
Antimony	ND	0.010	mg/l							
Arsenic	ND	0.0050	mg/l							
Barium	ND	0.010	mg/l							
Chromium	ND	0.0050	mg/l							
Cobalt	ND	0.010	mg/l							
Copper	ND	0.010	mg/l							
Molybdenum	ND	0.020	mg/l							
Silver	ND	0.0070	mg/l							
Thallium	ND	0.010	mg/l							
Vanadium	ND	0.010	mg/l							
Zinc	ND	0.020	mg/l							
LCS Analyzed: 07/19/2005 (5G18097-BS1)										
Antimony	1.07	0.010	mg/l	1.00		107	80-120			
Arsenic	1.00	0.0050	mg/l	1.00		100	80-120			
Barium	0.954	0.010	mg/l	1.00		95	80-120			
Chromium	0.986	0.0050	mg/l	1.00		99	80-120			
Cobalt	1.02	0.010	mg/l	1.00		102	80-120			
Copper	1.01	0.010	mg/l	1.00		101	80-120			
Molybdenum	0.956	0.020	mg/l	1.00		96	80-120			
Silver	0.507	0.0070	mg/l	0.500		101	80-120			
Thallium	0.962	0.010	mg/l	1.00		96	80-120			
Vanadium	0.988	0.010	mg/l	1.00		99	80-120			
Zinc	0.959	0.020	mg/l	1.00		96	80-120			
Matrix Spike Analyzed: 07/19/2005 (5G18097-MS1)					**Source: IOG0791-01**					
Antimony	0.998	0.010	mg/l	1.00	ND	100	75-125			
Arsenic	0.946	0.0050	mg/l	1.00	0.0099	94	75-125			
Barium	0.888	0.010	mg/l	1.00	0.024	86	75-125			
Chromium	0.897	0.0050	mg/l	1.00	ND	90	75-125			
Cobalt	0.946	0.010	mg/l	1.00	ND	95	75-125			
Copper	1.02	0.010	mg/l	1.00	ND	102	75-125			
Molybdenum	1.09	0.020	mg/l	1.00	0.21	88	75-125			
Silver	0.476	0.0070	mg/l	0.500	ND	95	75-125			
Thallium	0.837	0.010	mg/l	1.00	ND	84	75-125			
Vanadium	0.925	0.010	mg/l	1.00	0.0044	92	75-125			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G18097 Extracted: 07/18/05										
Matrix Spike Analyzed: 07/19/2005 (5G18097-MS1)					**Source: IOG0791-01**					
Zinc	0.910	0.020	mg/l	1.00	ND	91	75-125			
Matrix Spike Dup Analyzed: 07/19/2005 (5G18097-MSD1)					**Source: IOG0791-01**					
Antimony	0.994	0.010	mg/l	1.00	ND	99	75-125	0	20	
Arsenic	0.945	0.0050	mg/l	1.00	0.0099	94	75-125	0	20	
Barium	0.879	0.010	mg/l	1.00	0.024	86	75-125	1	20	
Chromium	0.886	0.0050	mg/l	1.00	ND	89	75-125	1	20	
Cobalt	0.937	0.010	mg/l	1.00	ND	94	75-125	1	20	
Copper	1.01	0.010	mg/l	1.00	ND	101	75-125	1	20	
Molybdenum	1.08	0.020	mg/l	1.00	0.21	87	75-125	1	20	
Silver	0.471	0.0070	mg/l	0.500	ND	94	75-125	1	20	
Thallium	0.837	0.010	mg/l	1.00	ND	84	75-125	0	20	
Vanadium	0.916	0.010	mg/l	1.00	0.0044	91	75-125	1	20	
Zinc	0.900	0.020	mg/l	1.00	ND	90	75-125	1	20	
Batch: 5G19037 Extracted: 07/19/05										
Blank Analyzed: 07/19/2005 (5G19037-BLK1)										
Mercury	ND	0.00020	mg/l							
LCS Analyzed: 07/19/2005 (5G19037-BS1)										
Mercury	0.00823	0.00020	mg/l	0.00800		103	90-115			
Matrix Spike Analyzed: 07/19/2005 (5G19037-MS1)					**Source: IOG0937-01**					
Mercury	0.00796	0.00020	mg/l	0.00800	ND	100	75-120			
Matrix Spike Dup Analyzed: 07/19/2005 (5G19037-MSD1)					**Source: IOG0937-01**					
Mercury	0.00788	0.00020	mg/l	0.00800	ND	98	75-120	1	20	

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G19086 Extracted: 07/19/05										
Blank Analyzed: 07/20/2005 (5G19086-BLK1)										
Aluminum	ND	0.050	mg/l							
Boron	ND	0.050	mg/l							
Iron	ND	0.040	mg/l							
Magnesium	ND	0.020	mg/l							
Manganese	ND	0.020	mg/l							
Strontium	ND	0.020	mg/l							
Tin	ND	0.10	mg/l							
Titanium	ND	0.0050	mg/l							
LCS Analyzed: 07/20/2005 (5G19086-BS1)										
Aluminum	0.972	0.050	mg/l	1.00		97	80-120			
Boron	1.01	0.050	mg/l	1.00		101	80-120			
Iron	1.04	0.040	mg/l	1.00		104	80-120			
Magnesium	4.92	0.020	mg/l	5.00		98	80-120			
Manganese	1.02	0.020	mg/l	1.00		102	80-120			
Strontium	0.985	0.020	mg/l	1.00		98	80-120			
Tin	0.973	0.10	mg/l	1.00		97	80-120			
Titanium	1.03	0.0050	mg/l	1.00		103	80-120			
Matrix Spike Analyzed: 07/20/2005 (5G19086-MS1)					**Source: IOG0857-01**					
Aluminum	1.06	0.050	mg/l	1.00	0.082	98	75-125			
Boron	1.66	0.050	mg/l	1.00	0.64	102	75-125			
Iron	0.991	0.040	mg/l	1.00	0.034	96	75-125			
Magnesium	33.0	0.020	mg/l	5.00	29	80	75-125			
Manganese	0.938	0.020	mg/l	1.00	0.010	93	75-125			
Strontium	2.68	0.020	mg/l	1.00	1.7	98	75-125			
Tin	0.933	0.10	mg/l	1.00	0.0053	93	75-125			
Titanium	0.987	0.0050	mg/l	1.00	0.0034	98	75-125			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G19086 Extracted: 07/19/05										
Matrix Spike Dup Analyzed: 07/20/2005 (5G19086-MSD1)					**Source: IOG0857-01**					
Aluminum	1.11	0.050	mg/l	1.00	0.082	103	75-125	5	20	
Boron	1.74	0.050	mg/l	1.00	0.64	110	75-125	5	20	
Iron	1.02	0.040	mg/l	1.00	0.034	99	75-125	3	20	
Magnesium	34.4	0.020	mg/l	5.00	29	108	75-125	4	20	
Manganese	0.977	0.020	mg/l	1.00	0.016	97	75-125	4	20	
Strontium	2.76	0.020	mg/l	1.00	1.7	106	75-125	3	20	
Tin	0.950	0.10	mg/l	1.00	0.0055	94	75-125	2	20	
Titanium	1.02	0.0050	mg/l	1.00	0.0034	102	75-125	3	20	
Batch: 5G25067 Extracted: 07/25/05										
Blank Analyzed: 07/25/2005 (5G25067-BLK1)										
Zirconium	ND	0.20	mg/l							
LCS Analyzed: 07/25/2005 (5G25067-BS1)										
Zirconium	1.01	0.20	mg/l	1.00		101	80-120			
Matrix Spike Analyzed: 07/25/2005 (5G25067-MS1)					**Source: IOG1423-01**					
Zirconium	1.02	0.20	mg/l	1.00	ND	102	75-125			
Matrix Spike Dup Analyzed: 07/25/2005 (5G25067-MSD1)					**Source: IOG1423-01**					
Zirconium	1.03	0.20	mg/l	1.00	ND	103	75-125	1	20	

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14039 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14039-BLK1)										
Bromide	ND	0.50	mg/l							
Fluoride	ND	0.50	mg/l							
Nitrate-N	ND	0.15	mg/l							
Nitrite-N	ND	0.15	mg/l							
Sulfate	ND	0.50	mg/l							
LCS Analyzed: 07/14/2005 (5G14039-BS1)										
Bromide	4.88	0.50	mg/l	5.00		98	90-110			
Fluoride	4.68	0.50	mg/l	5.00		94	90-110			
Nitrate-N	1.08	0.15	mg/l	1.13		96	90-110			
Nitrite-N	1.47	0.15	mg/l	1.52		97	90-110			
Sulfate	9.53	0.50	mg/l	10.0		95	90-110			*M-3*
Matrix Spike Analyzed: 07/14/2005 (5G14039-MS1)					**Source: IOG0829-01**					
Bromide	4.97	0.50	mg/l	5.00	ND	99	80-120			
Fluoride	4.98	0.50	mg/l	5.00	0.18	96	80-120			
Nitrate-N	6.59	0.15	mg/l	1.13	5.2	123	80-120			*M-HA*
Nitrite-N	1.54	0.15	mg/l	1.52	ND	101	80-120			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14039-MSD1)					**Source: IOG0829-01**					
Bromide	4.71	0.50	mg/l	5.00	ND	94	80-120	5	20	
Fluoride	4.91	0.50	mg/l	5.00	0.18	95	80-120	1	20	
Nitrate-N	6.54	0.15	mg/l	1.13	5.2	119	80-120	1	20	
Nitrite-N	1.50	0.15	mg/l	1.52	ND	99	80-120	3	20	
Batch: 5G14075 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14075-BLK1)										
Phosphorus	ND	0.050	mg/l							

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14075 Extracted: 07/14/05										
LCS Analyzed: 07/14/2005 (5G14075-BS1)										
Phosphorus	0.915	0.050	mg/l	1.00		92	80-120			
Matrix Spike Analyzed: 07/14/2005 (5G14075-MS1)					**Source: IOG0784-01**					
Phosphorus	1.25	0.050	mg/l	1.00	0.37	88	65-130			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14075-MSD1)					**Source: IOG0784-01**					
Phosphorus	1.31	0.050	mg/l	1.00	0.37	94	65-130	5	15	
Batch: 5G14089 Extracted: 07/14/05										
Duplicate Analyzed: 07/14/2005 (5G14089-DUP1)					**Source: IOG0808-01**					
Color	10.0	1.0	Color Units		10			0	20	*pH*
Batch: 5G14094 Extracted: 07/14/05										
Duplicate Analyzed: 07/14/2005 (5G14094-DUP1)					**Source: IOG0812-01**					
Residual Chlorine	ND	0.10	mg/l		ND				20	
Batch: 5G14118 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14118-BLK1)										
Surfactants (MBAS)	ND	0.10	mg/l							
LCS Analyzed: 07/14/2005 (5G14118-BS1)										
Surfactants (MBAS)	0.255	0.10	mg/l	0.250		102	90-110			

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14118 Extracted: 07/14/05										
Matrix Spike Analyzed: 07/14/2005 (5G14118-MS1)					**Source: IOG0833-01**					
Surfactants (MBAS)	0.271	0.10	mg/l	0.250	ND	108	50-125			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14118-MSD1)					**Source: IOG0833-01**					
Surfactants (MBAS)	0.299	0.10	mg/l	0.250	ND	120	50-125	10	20	
Batch: 5G15045 Extracted: 07/15/05										
Blank Analyzed: 07/15/2005 (5G15045-BLK1)										
Sulfide	ND	0.10	mg/l							
LCS Analyzed: 07/15/2005 (5G15045-BS1)										
Sulfide	0.567	0.10	mg/l	0.560		101	80-120			
Matrix Spike Analyzed: 07/15/2005 (5G15045-MS1)					**Source: IOG0959-02**					
Sulfide	0.547	0.10	mg/l	0.560	0.010	96	70-130			
Matrix Spike Dup Analyzed: 07/15/2005 (5G15045-MSD1)					**Source: IOG0959-02**					
Sulfide	0.527	0.10	mg/l	0.560	0.010	92	70-130	4	30	
Batch: 5G15075 Extracted: 07/15/05										
Blank Analyzed: 07/18/2005 (5G15075-BLK1)										
Total Cyanide	ND	0.025	mg/l							
LCS Analyzed: 07/18/2005 (5G15075-BS1)										
Total Cyanide	0.191	0.025	mg/l	0.200		96	90-110			

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20078 Extracted: 07/20/05										
LCS Analyzed: 07/20/2005 (5G20078-BS1)										**M-NR1**
Oil & Grease	16.0	5.0	mg/l	20.0		80	65-120			
LCS Dup Analyzed: 07/20/2005 (5G20078-BSD1)										
Oil & Grease	15.5	5.0	mg/l	20.0		78	65-120	3	20	
Batch: 5G22080 Extracted: 07/22/05										
Blank Analyzed: 07/22/2005 (5G22080-BLK1)										
Phenols	ND	0.10	mg/l							
LCS Analyzed: 07/22/2005 (5G22080-BS1)										
Phenols	0.508	0.10	mg/l	0.500		102	90-110			
Matrix Spike Analyzed: 07/22/2005 (5G22080-MS1)					**Source: IOG0903-08**					
Phenols	0.508	0.10	mg/l	0.500	ND	102	65-155			
Matrix Spike Dup Analyzed: 07/22/2005 (5G22080-MSD1)					**Source: IOG0903-08**					
Phenols	0.526	0.10	mg/l	0.500	ND	105	65-155	3	20	
Batch: 5G22113 Extracted: 07/22/05										
Blank Analyzed: 07/22/2005 (5G22113-BLK1)										
Ammonia-N	ND	0.50	mg/l							
LCS Analyzed: 07/22/2005 (5G22113-BS1)										
Ammonia-N	0.993	0.50	mg/l	1.00		99	85-115			

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Attention: Deborah Foster

Project ID: TTO
Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G22113 Extracted: 07/22/05										
Matrix Spike Analyzed: 07/22/2005 (5G22113-MS1)					**Source: IOG0857-01**					
Ammonia-N	1.74	0.50	mg/l	2.00	ND	87	75-125			
Matrix Spike Dup Analyzed: 07/22/2005 (5G22113-MSD1)					**Source: IOG0857-01**					
Ammonia-N	1.83	0.50	mg/l	2.00	ND	92	75-125	5	15	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

DIQUAT/PARAQUAT (EPA 549.2)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: C5G1809 Extracted: 07/18/05										
Blank Analyzed: 07/18/2005 (C5G1809-BLK1)										
Diquat	ND	4.0	ug/l							
Paraquat	ND	20	ug/l							
LCS Analyzed: 07/18/2005 (C5G1809-BS1)										
Diquat	32.5	4.0	ug/l	40.0		81	70-120			
Paraquat	32.7	20	ug/l	40.0		82	65-120			
LCS Dup Analyzed: 07/18/2005 (C5G1809-BSD1)										
Diquat	32.7	4.0	ug/l	40.0		82	70-120	1	20	
Paraquat	33.1	20	ug/l	40.0		83	65-120	1	20	
Matrix Spike Analyzed: 07/18/2005 (C5G1809-MS1)					**Source: COG0352-01**					
Diquat	34.8	4.0	ug/l	40.0	ND	87	70-120			
Paraquat	35.5	20	ug/l	40.0	ND	89	65-120			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: ITO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

DATA QUALIFIERS AND DEFINITIONS

C	Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
L	Laboratory Control Sample recovery was above the method control limits. Analyte not detected, data not impacted.
M-3	Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
M-HA	Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
M-NR1	There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
pH	pH = 7
R-2	The RPD exceeded the method control limit.
RL-3	Reporting limit raised due to high concentrations of non-target analytes.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

ADDITIONAL COMMENTS

For 1,2-Diphenylhydrazine:

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
Calculation	Water	X	X
EPA 300.0	Water	X	X
EPA 330.5	Water	X	X
EPA 350.3	Water	X	X
EPA 3510/8082	Water	X	X
EPA 3510C/8081A	Water	X	X
EPA 365.3	Water	X	X
EPA 376.2	Water	X	X
EPA 413.1	Water	X	X
EPA 420.1	Water	X	X
EPA 6010B	Water	X	X
EPA 7470A	Water	X	X
EPA 8260B	Water	X	X
EPA 8270C	Water	X	X
SM2120B	Water	N/A	N/A
SM4500-CN-C,E	Water	X	X
SM4500-NORG,C	Water		X
SM5540-C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Subcontracted Laboratories

Del Mar Analytical - Colton *California Cert #1169, Arizona Cert #AZ0062, Nevada Cert #CA-242*
1014 E. Cooley Drive, Suite AB - Colton, CA 92324
Method Performed: EPA 549.2
Samples: IOG0857-01

Test America, Inc.
2960 Foster Creighton Drive - Nashville, TN 37204
Analysis Performed: 8151A (Herbicides)
Samples: IOG0857-01

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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Del Mar Analytical

17461 Derian Ave. [illegible], Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046
9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689
9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOG0857

SENDING LABORATORY:
Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 261-1228
Project Manager: Kathleen A. Robb

RECEIVING LABORATORY:
Del Mar Analytical - Colton
1014 E. Cooley Drive, Suite AB
Colton, CA 92324
Phone :(909) 370-4667
Fax: (909) 370-1046
COG0448

Analysis	Expiration	Due	Comments
Sample ID: IOG0857-01 Water	**Sampled: 07/13/05 14:00**		
549.1-Diquat	07/20/05 14:00	07/25/05 12:00	std TAT- sub to DMAC-see comments

Containers Supplied:
1 L Brown Poly (IOG0857-01V)

SAMPLE INTEGRITY:

All containers intact: ☑ Yes ☐ No
Custody Seals Present: ☐ Yes ☐ No
Sample labels/COC agree: ☑ Yes ☐ No
Samples Preserved Properly: ☑ Yes ☐ No
Samples Received On Ice:: ☑ Yes ☐ No
Samples Received at (temp): 6°

Released By	Date	Time	Received By	Date	Time
VaBandy			A. Greco	7-14-05	~~A~~
Anthony Greco	7-14-05	1500	Ashley Banks	7/14/05	1500

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix AZ 85044 (480) 785-0043 FAX (480) 785 0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

IOG0857

1/3

041

Client Name/Address:
USF Westates
PO BOX 3308
Parker AZ

P.O. #:

Project: TTO

Project Manager/Phone Number: Foster 928 669 5758

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	Metals WDES	HG 7470/7471	total cyanide	total phenols	O+G 413.1	Sulfide 376.2	Residual Chlorine	total phosp (ELB)	TKN NH3	Special Instructions
TTO	H2O	500ml	1	7/12-13	HNO3	X	X								
			1		NAOH			X							
		Lamb	2		H2SO4				X						
			2		HCL					X					
		500ml	1		NAOH/ZN						X				
		50ml	1		—							X			
		500ml	2		H2SO4								X	X	

VB

Relinquished By: N Foster Date/Time: 7/13/05 2pm

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time:

Relinquished By: Date/Time:

Received By: Date/Time: 7-14-05 10:10

Turnaround Time: (check)
Same Day ____ 72 Hours ____
24 Hours ____ 5 days ____
48 hours ____ normal ✓

Sample Integrity: (Check)
Intact ✓ On Ice: ✓ 10°C

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

2/3

041

Client Name/Address: USF Westates

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	Color, Br, F, NO3	NO2, SO4, MBA	8260B + CS2	Vin Acet	2 CVE, Acrolein	Acrylonitrile via 8260B	8270C + NDMA	8081/8082	8151 A	Special Instructions
FTO	H2O	500ml	2	7/12-13	—	X	X								
		VOA	4		HCl			X	X						
		VOA	3		—					X	X				
		LAMB	1		—							X			
		LAMB	1		—								X		
		LAMB	1		—									X	

Relinquished By: Nlfoster Date/Time: 7/13/05 2pm
Received By: Date/Time:

Relinquished By: Date/Time:
Received By: Date/Time:

Relinquished By: Date/Time:
Received By: Date/Time: 7-14-05 10:10

Turnaround Time: (check)
Same Day ______ 72 Hours ______
24 Hours ______ 5 days ✓
48 hours ______ normal ______

Sample Integrity: (Check)
Intact ✓ On Ice: ✓ 18°C

73

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
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9830 South 51st St., Suite B-120, Phoenix AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address: USF Westates

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

041

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	549.2	EXTRAS								Special Instructions
TT, O	H_2O	LBYN	1	7/12-13	H_2SO_4	X									
↓	↓	LAMB	4	↓	—		X								

Relinquished By Date/Time: 7/13/05 2pm

Received By Date/Time:

Relinquished By Date/Time:

Received By Date/Time:

Relinquished By Date/Time:

Received By Date/Time: 7-14-05 10:10

Turnaround Time: (check)

Same Day ______ 72 Hours ______

24 Hours ______ 5 days ______

48 hours ______ normal [✓]

Sample Integrity: (Check)

Intact ✓ On Ice: ✓ 10°C

Melting ice

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

IOG0857

Client Name/Address:
Usf Westates
PO BOX 3308
Parker AZ

P.O. #:

Project:
TTO

Project Manager/Phone Number:
Foster 928 669 5758

Sampler:

Phone Number:

Fax Number:

ANALYSIS REQUIRED

1/3

C041

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	Metals 6010B	Hg 7470/7471	total cyanide	total phenols	O+G 413.1	Sulfide 376.2	Residual chlorine	total phos (365.3)	NH3, TKN	Special Instructions
TTO	H2O	500ml	1	7/12-13	HNO3	X	X								
			1		NAOH			X							
		1 Amb	2		H2SO4				X						
			2		HCL					X					
		500ml	1		NAOH/ZN						X				
		150ml	1		—							X			
		500ml	2		H2SO4								X	X	

VB

Relinquished By: NFoster Date/Time: 7/13/05 2pm
Received By: Date/Time:

Relinquished By: Date/Time:
Received By: Date/Time:

Relinquished By: Date/Time:
Received By: Eddie Arells Date/Time: 7-14-05 10:10

Turnaround Time: (check)
Same Day ____ 72 Hours ____
24 Hours ____ 5 days ____
48 hours ____ normal ✓
Sample Integrity: (Check)
Intact ✓ On Ice: ✓ 10°C

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

2/3

041

Client Name/Address: USF Westates

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	Color, Br, F, NO3	NO2, SO4, MBA	8260B + CS2	Vin Acet	2CVE, Acrolein	Acrylonitrile via 8260B	8270D + NDMA	8081/8082	8151A	Special Instructions
FTO	H2O	500ml	2	7/12-13	—	X	X								
↓	↓	VOA	4	↓	HCL			X	X						
		VOA	3		—					X	X				
		LAMB	1		—							X			
		LAMB	1		—								X		
		LAMB	1		—									X	

Relinquished By RFoster Date/Time: 7/13/05 2pm
Received By Date/Time:

Relinquished By Date/Time:
Received By Date/Time:

Relinquished By Date/Time:
Received By Date/Time: 7.14.05 10:10

Turnaround Time: (check)
Same Day ______ 72 Hours ______
24 Hours ______ 5 days ______
48 hours ______ [✓ normal]
Sample Integrity: (Check)
Intact ✓ On Ice: ✓ 18°C

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address: USF Westates

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

041

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation	549.2	extras								Special Instructions
TTO	H2O	LBRN	1	7/12-13	H2SO4	X									
↓	↓	LAMB	4	↓	—		X								

Relinquished By Date/Time: 7/13/05 2pm

Received By Date/Time:

Relinquished By Date/Time:

Received By Date/Time:

Relinquished By Date/Time:

Received By Date/Time: 7-14-05 10:10

Turnaround Time: (check)
Same Day ______ 72 Hours ______
24 Hours ______ 5 days ______
48 hours ______ normal X

Sample Integrity: (Check)
Intact ✓ On Ice: ✓ 10°C

Melting ICE

Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine CA 92614 (949) 261-1022 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton CA 92324 (909) 370-4667 FAX (949) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

August 16, 2005

U.S. Filter/ Westates Carbon
P.O. Box 3308
Parker, AZ 85344

Attention: Deborah Foster

Project: Semi-Annual
TTO
Sampled: 07/13/05
Del Mar Analytical Number: IOG0857

Dear Ms. Foster:

Test America Analytical Testing Corporation reperformed the 8151A Herbicides for confirmation purposes in regards to the referenced project above. Please use the following cross-reference table when reviewing your results.

U.S. Filter ID	Del Mar ID	Test America ID
TTO	IOG0857-01	05-A102935

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please contact me at (949) 261-1022, extension 218.

Sincerely yours,
DEL MAR ANALYTICAL

Kathleen A. Robb

Kathleen A. Robb
Project Manager

Enclosure

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

ANALYTICAL REPORT

DEL MAR ANALYTICAL, IRVINE 11405
MICHELE HARPER
17461 DERIAN, STE 100
IRVINE, CA 92614

Lab Number: 05-A102935
Sample ID: IOG0857-01
Sample Type: Ground water
Site ID:

Project: IOG0857
Project Name:
Sampler:

Date Collected: 7/13/05
Time Collected: 14:00
Date Received: 7/19/05
Time Received: 9:55

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
•PESTICIDES/PCB's/HERBICIDES•									
2,4-D	ND	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
2,4,5-T	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
2,4,5-TP	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
Dalapon	ND	mg/l	0.0200	1	7/20/05	19:04	K. Burritt	8151A	440
2,4-DB	ND	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
Dicamba	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
Dichloroprop	ND	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
Dinoseb	ND	mg/l	0.00250	1	7/20/05	19:04	K. Burritt	8151A	440
MCPA	ND	mg/l	0.500	1	7/20/05	19:04	K. Burritt	8151A	440
MCPP	ND	mg/l	0.500	1	7/20/05	19:04	K. Burritt	8151A	440
Pentachlorophenol	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
4 Nitrophenol	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Herbicides	1000 ml	10.0 ml	7/19/05		J. Davis	8151/615

Surrogate	% Recovery	Target Range
surr-DCAA	92.	51. - 136.

Sample report continued . . .

ANALYTICAL REPORT

Laboratory Number: 05-A102935
Sample ID: IOG0857-01

LABORATORY COMMENTS:
ND - Not detected at the report limit.
B = Analyte was detected in the method blank.
J - Estimated Value below Report Limit.
E - Estimated Value above the calibration limit of the instrument.
- Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

PROJECT QUALITY CONTROL DATA
Project Number: IOG0857
Project Name:
Page: 1
Laboratory Receipt Date: 7/19/05

Matrix Spike Recovery

Note. If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
PEST/PCB/HERB PARAMETERS								
2,4-D	mg/l	< 0.00006	0.00363	0.00500	73	35. - 141.	440	blank
2,4,5-T	mg/l	< 0.00003	0.00341	0.00500	68	25. - 149.	440	blank
2,4,5-TP	mg/l	< 0.00003	0.00431	0.00500	86	31. - 137.	440	blank
Dalapon	mg/l	< 0.00002	0.00018	0.00500	4#	10. - 303.	440	blank
2,4-DB	mg/l	< 0.00009	0.00702	0.00500	140	34. - 153.	440	blank
Dicamba	mg/l	< 0.00006	0.00338	0.00500	68	23. - 157.	440	blank
Dichloroprop	mg/l	< 0.00006	0.00403	0.00500	81	45. - 152.	440	blank
Dinoseb	mg/l	< 0.00005	0.00384	0.00500	77	27. - 129.	440	blank
MCPA	mg/l	< 0.00410	0.214	0.500	43	26. - 139.	440	blank
MCPP	mg/l	< 0.00700	0.539	0.500	108	24. - 164.	440	blank
Pentachlorophenol	mg/l	< 0.00003	0.00297	0.00500	59	25. - 133.	440	blank
4-Nitrophenol	mg/l	< 0.00005	< 0.00050	0.00500	N/A	21. - 133.	440	blank

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
PEST/PCB/HERB PARAMETERS						
2,4-D	mg/l	0.00363	0.00408	11.67	34.	440
2,4,5-T	mg/l	0.00341	0.00381	11.08	51.	440
2,4,5-TP	mg/l	0.00431	0.00482	11.17	44.	440
Dalapon	mg/l	0.00018	0.00018	0.00	89.	440
2,4-DB	mg/l	0.00702	0.00659	6.32	33.	440
Dicamba	mg/l	0.00338	0.00369	8.77	46.	440
Dichloroprop	mg/l	0.00403	0.00455	12.12	41.	440
Dinoseb	mg/l	0.00384	0.00416	8.00	50.	440
MCPA	mg/l	0.214	0.309	36.33	50.	440
MCPP	mg/l	0.539	0.596	10.04	45	440
Pentachlorophenol	mg/l	0.00297	0.00335	12.03	49.	440
4 Nitrophenol	mg/l	< 0.00050	0.00373	152.72#	55.	440

Project QC continued . . .

TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

PROJECT QUALITY CONTROL DATA
Project Number: IOG0857
Project Name:
Page: 2
Laboratory Receipt Date: 7/19/05

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
PEST/PCB/HERB PARAMETERS						
2,4-D	mg/l	0.00500	0.00398	80	35 - 141	440
2,4,5-T	mg/l	0.00500	0.00374	75	33 - 136	440
2,4,5-TP	mg/l	0.00500	0.00477	95	33 - 136	440
Dalapon	mg/l	0.00500	0.00025	5 #	10 - 101	440
2,4-DB	mg/l	0.00500	0.00633	127	38 - 143	440
Dicamba	mg/l	0.00500	0.00361	72	23 - 157	440
Dichloroprop	mg/l	0.00500	0.00443	89	50 - 143	440
Dinoseb	mg/l	0.00500	0.00384	77	28 - 127	440
MCPA	mg/l	0.500	0.311	62	26 - 139	440
MCPP	mg/l	0.500	0.525	105	24 - 164	440
Pentachlorophenol	mg/l	0.00500	0.00328	66	33 - 130	440
4-Nitrophenol	mg/l	0.00500	0.00364	73	23 - 125	440
surr-DCAA	% Rec			102	51 - 136	440

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed

Project QC continued . . .

Del Mar Analytical

17461 Derian Ave [illegible]00, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046
9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689
9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

423201

SUBCONTRACT ORDER - PROJECT # IOG0857

SENDING LABORATORY:

Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 261-1228
Project Manager: Kathleen A. Robb

11405

RECEIVING LABORATORY:

Test America, Inc.
2960 Foster Creighton Drive
Nashville, TN 37204
Phone :800/765-0980
Fax: 615/726-0954

Standard TAT is requested unless specific due date is requested => Due Date:________ Initials:________

Analysis	Expiration	Comments	
Sample ID: IOG0857-01 Water	Sampled: 07/13/05 14:00		
8151A (Herbicides)	07/20/05 14:00	Needs Arizona Certification	102935

Containers Supplied:
1 L Amber (IOG0857-01Z)

SAMPLE INTEGRITY:

All containers intact: ☒ Yes ☐ No
Custody Seals Present: ☒ Yes ☐ No
Sample labels/COC agree: ☒ Yes ☐ No
Samples Preserved Properly: ☒ Yes ☐ No
Samples Received On ice: ☒ Yes ☐ No
Samples Received at (temp): 5.9°C

Released By	Date	Time	Received By	Date	Time
	7.18.05	15:30		7/19/05	955

Test/America
INCORPORATED

Sample NonConformance/COC Revision Form

Initiated by:	JDJacobs	Phone:	9492611022	NC Closed	☑
Client Name:	DEL MAR ANALYT	Sample Range:	102935	Date Closed	7/19/2005
Client Contact:	MICHELE HARPE	SDG:	423201		
Client Account:	11405	Analyst:	71		
Date Created:	7/19/2005	Supervisor:	Paul Buckingham		
NC #:	102935	NC Type:	NC Analytical 1		
Project Name:		Terminal Manager:			
Project Number:	IOG0857				
Project Origin	AZ				
Regulatory :					

Process:	HERB List?	Corrected By:	Kenny Bundy
Action:	Herb List: Long	Closed: ☑	kbundy

Comments: Comment added by: JDJacobs on 7/19/2005 2:11:02 PM
NC closed with out comments

****

Comment added by: kbundy on 7/19/2005 2:04:51 PM
Long list herbicides.

****

Added Without Comments

TestAmerica
ANALYTICAL TESTING CORPORATION

Nashville Division

COOLER RECEIPT FORM BC#

423201

Client Name : Del Mar Analytical

Cooler Received/Opened On: 7/19/05 Accessioned By: James D. Jacobs

Log-in Personnel Signature

1. Temperature of Cooler when triaged: 5.7 **Degrees Celsius**
2. Were custody seals on outside of cooler?.................... [✓ YES]....NO....NA
   a. If yes, how many and where: 1 Back
3. Were custody seals on containers?.................... [✓ NO]...YES...NA
4. Were the seals intact, signed, and dated correctly?.................... [✓ YES]....NO...NA
5. Were custody papers inside cooler?.................... [✓ YES]....NO...NA
6. Were custody papers properly filled out (ink, signed, etc)?.................... [✓ YES]....NO...NA
7. Did you sign the custody papers in the appropriate place?.................... [✓ YES]...NO...NA
8. What kind of packing material used? [✓ Bubblewrap] Peanuts Vermiculite Foam Insert Ziplock baggies Paper Other None
9. Cooling process: Ice [✓ Ice-pack] Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)?.................... [✓ YES]...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)?.................... [✓ YES]...NO...NA
12. Did all container labels and tags agree with custody papers?.................... [✓ YES]...NO...NA
13. Were correct containers used for the analysis requested?.................... [✓ YES]...NO...NA
14. a. Were VOA vials received?.................... YES..[✓ NO]...NA
    b. Was there any observable head space present in any VOA vial?.................... NO...YES..[✓ NA]
15. Was sufficient amount of sample sent in each container?.................... [✓ YES]...NO...NA
16. Were correct preservatives used?.................... [✓ YES]...NO...NA
    If not, record standard ID of preservative used here
17. Was residual chlorine present?.................... [✓ NO]..YES...NA
18. Indicate the Airbill Tracking Number (last 4 digits for Fedex only) and Name of Courier below:

1ZIAE5870198963060

Fed-Ex [✓ UPS] Velocity DHL Route Off-street Misc.

19. If a Non-Conformance exists, see attached or comments below:

BIS = Broken in shipment
Cooler Receipt Form

LF-1
End of Form

Revised 4/5/05

Del Mar Analytical

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
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9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3 Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT #IOG0857

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Kathleen A. Robb	Test America, Inc. 2960 Foster Creighton Drive Nashville, TN 37204 Phone 800/765-0980 Fax: 615/726-0954

Standard TAT is requested unless specific due date is requested => Due Date:________________ **Initials:**________

Analysis	Expiration	Comments
Sample ID: IOG0857-01 Water	**Sampled: 07/13/05 14:00**	
8151A (Herbicides)	07/20/05 14:00	Needs Arizona Certification

Containers Supplied:
1 L Amber (IOG0857-01Z)

SAMPLE INTEGRITY:

All containers intact: ☐ Yes ☐ No
Custody Seals Present: ☐ Yes ☐ No
Sample labels/COC agree: ☐ Yes ☐ No
Samples Preserved Properly: ☐ Yes ☐ No
Samples Received On Ice: ☐ Yes ☐ No
Samples Received at (temp): ________

Released By Date Time Received By Date Time

Released By Date Time Received By Date Time

Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

LABORATORY REPORT

Prepared For:
U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project: TTO

Sampled: 07/13/05
Received: 07/14/05
Issued: 07/27/05 17:35

NELAP #01108CA California ELAP#1197 CSDLAC #10117

The results listed within this Laboratory Report pertain only to the samples tested in the laboratory. The analyses contained in this report were performed in accordance with the applicable certifications as noted. All soil samples are reported on a wet weight basis unless otherwise noted in the report. This Laboratory Report is confidential and is intended for the sole use of Del Mar Analytical and its client. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical. The Chain(s) of Custody, 4 pages, are included and are an integral part of this report.

This entire report was reviewed and approved for release.

SAMPLE CROSS REFERENCE

SUBCONTRACTED Refer to the last page for specific subcontract laboratory information included in this report.

LABORATORY ID	CLIENT ID	MATRIX
IOG0857-01	TTO	Water

Revised

2,4 D result

Reviewed By:

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5030B/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Acrolein	EPA 8260B	5G16003	50	ND	1	7/16/2005	7/16/2005	
Acrylonitrile	EPA 8260B	5G16003	50	ND	1	7/16/2005	7/16/2005	
2-Chloroethyl vinyl ether	EPA 8260B	5G16003	5.0	ND	1	7/16/2005	7/16/2005	
Surrogate: Dibromofluoromethane (80-120%)				*99 %*				
Surrogate: Toluene-d8 (80-120%)				*102 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)				*96 %*				

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Benzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Bromobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromochloromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromodichloromethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Bromoform	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Bromomethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
n-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
sec-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
tert-Butylbenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Carbon Disulfide	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Carbon tetrachloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Chlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Chloroethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Chloroform	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Chloromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
2-Chlorotoluene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
4-Chlorotoluene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Dibromochloromethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dibromo-3-chloropropane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2-Dibromoethane (EDB)	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Dibromomethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,4-Dichlorobenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Dichlorodifluoromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloroethene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
cis-1,2-Dichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
trans-1,2-Dichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
2,2-Dichloropropane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
cis-1,3-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
trans-1,3-Dichloropropene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Ethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Hexachlorobutadiene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Isopropylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
p-Isopropyltoluene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Methylene chloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Naphthalene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
n-Propylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Styrene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1,1,2-Tetrachloroethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1,2,2-Tetrachloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Tetrachloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Toluene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,2,3-Trichlorobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2,4-Trichlorobenzene	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,1,1-Trichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,1,2-Trichloroethane	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Trichloroethene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Trichlorofluoromethane	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
1,2,3-Trichloropropane	EPA 8260B	5G21019	10	ND	1	7/21/2005	7/21/2005	
1,2,4-Trimethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
1,3,5-Trimethylbenzene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Vinyl acetate	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
Vinyl chloride	EPA 8260B	5G21019	5.0	ND	1	7/21/2005	7/21/2005	
o-Xylene	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
m,p-Xylenes	EPA 8260B	5G21019	2.0	ND	1	7/21/2005	7/21/2005	
Surrogate: Dibromofluoromethane (80-120%)				*99 %*				
Surrogate: Toluene-d8 (80-120%)				*104 %*				
Surrogate: 4-Bromofluorobenzene (80-120%)				*95 %*				

The results pertain only to the samples tested in the laboratory. This report shall not be reproduced, except in full, without written permission from Del Mar Analytical.

U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Acenaphthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Acenaphthylene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Aniline	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Anthracene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzidine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	L
Benzoic acid	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Benzo(a)anthracene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(b)fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(k)fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(g,h,i)perylene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzo(a)pyrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Benzyl alcohol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroethoxy)methane	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroethyl)ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-chloroisopropyl)ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Bis(2-ethylhexyl)phthalate	EPA 8270C	5G17017	50	ND	1	7/17/2005	7/20/2005	
4-Bromophenyl phenyl ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Butyl benzyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
4-Chloroaniline	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Chloronaphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Chloro-3-methylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2-Chlorophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Chlorophenyl phenyl ether	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Chrysene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Dibenz(a,h)anthracene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Dibenzofuran	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Di-n-butyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
1,3-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,4-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,2-Dichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
3,3-Dichlorobenzidine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dichlorophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Diethyl phthalate	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,4-Dimethylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Dimethyl phthalate	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4,6-Dinitro-2-methylphenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dinitrophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4-Dinitrotoluene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,6-Dinitrotoluene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Di-n-octyl phthalate	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Fluoranthene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water) - cont.								
Reporting Units: ug/l								
Fluorene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorobutadiene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Hexachlorocyclopentadiene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Hexachloroethane	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Indeno(1,2,3-cd)pyrene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Isophorone	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Methylnaphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Methylphenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Methylphenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Naphthalene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
3-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
4-Nitroaniline	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Nitrobenzene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2-Nitrophenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
4-Nitrophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
N-Nitrosodiphenylamine	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
N-Nitroso-di-n-propylamine	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Pentachlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Phenanthrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Phenol	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
Pyrene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
1,2,4-Trichlorobenzene	EPA 8270C	5G17017	10	ND	1	7/17/2005	7/20/2005	
2,4,5-Trichlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
2,4,6 Trichlorophenol	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
N-Nitrosodimethylamine	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	C
1,2-Diphenylhydrazine/Azobenzene	EPA 8270C	5G17017	20	ND	1	7/17/2005	7/20/2005	
Surrogate: 2-Fluorophenol (30-120%)				*69 %*				
Surrogate: Phenol-d6 (35-120%)				*70 %*				
Surrogate: 2,4,6-Tribromophenol (45-120%)				*84 %*				
Surrogate: Nitrobenzene-d5 (45-120%)				*71 %*				
Surrogate: 2-Fluorobiphenyl (45-120%)				*75 %*				
Surrogate: Terphenyl-d14 (45-120%)				*80 %*				

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Aldrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
alpha-BHC	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
beta-BHC	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
delta-BHC	EPA 3510C/8081A	5G20057	0.20	ND	0.971	7/20/2005	7/20/2005	
gamma-BHC (Lindane)	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Chlordane	EPA 3510C/8081A	5G20057	1.0	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDD	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDE	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
4,4'-DDT	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Dieldrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan I	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan II	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endosulfan sulfate	EPA 3510C/8081A	5G20057	0.20	ND	0.971	7/20/2005	7/20/2005	
Endrin	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endrin aldehyde	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Endrin ketone	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Heptachlor	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Heptachlor epoxide	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Methoxychlor	EPA 3510C/8081A	5G20057	0.10	ND	0.971	7/20/2005	7/20/2005	
Toxaphene	EPA 3510C/8081A	5G20057	5.0	ND	0.971	7/20/2005	7/20/2005	
Surrogate: Tetrachloro-m-xylene (35-115%)				*56 %*				
Surrogate: Decachlorobiphenyl (45-120%)				*73 %*				

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Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

POLYCHLORINATED BIPHENYLS (EPA 3510C/8082)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Aroclor 1016	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1221	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1232	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1242	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1248	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1254	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Aroclor 1260	EPA 3510/8082	5G20057	1.0	ND	0.971	7/20/2005	7/22/2005	
Surrogate: Decachlorobiphenyl (45-120%)				*88 %*				

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Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METALS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Aluminum	EPA 6010B	5G19086	0.050	0.082	1	7/19/2005	7/20/2005	
Antimony	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Arsenic	EPA 6010B	5G18097	0.0050	0.0052	1	7/18/2005	7/20/2005	
Barium	EPA 6010B	5G18097	0.010	0.075	1	7/18/2005	7/20/2005	
Boron	EPA 6010B	5G19086	0.050	0.64	1	7/19/2005	7/20/2005	
Chromium	EPA 6010B	5G18097	0.0050	ND	1	7/18/2005	7/20/2005	
Cobalt	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Copper	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Iron	EPA 6010B	5G19086	0.040	ND	1	7/19/2005	7/20/2005	
Magnesium	EPA 6010B	5G19086	0.020	29	1	7/19/2005	7/20/2005	
Manganese	EPA 6010B	5G19086	0.020	ND	1	7/19/2005	7/20/2005	
Mercury	EPA 7470A	5G19037	0.00020	ND	1	7/19/2005	7/19/2005	
Molybdenum	EPA 6010B	5G18097	0.020	ND	1	7/18/2005	7/20/2005	
Silver	EPA 6010B	5G18097	0.0070	ND	1	7/18/2005	7/20/2005	
Strontium	EPA 6010B	5G19086	0.020	1.7	1	7/19/2005	7/20/2005	
Thallium	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Tin	EPA 6010B	5G19086	0.10	ND	1	7/19/2005	7/20/2005	
Titanium	EPA 6010B	5G19086	0.0050	ND	1	7/19/2005	7/20/2005	
Vanadium	EPA 6010B	5G18097	0.010	ND	1	7/18/2005	7/20/2005	
Zinc	EPA 6010B	5G18097	0.020	ND	1	7/18/2005	7/20/2005	
Zirconium	EPA 6010B	5G25067	0.20	ND	1	7/25/2005	7/25/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

INORGANICS

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: Color Units								
Color	SM2120B	5G14089	1.0	ND	1	7/14/2005	7/14/2005	pH
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Total Kjeldahl Nitrogen	SM4500-NORG.C	5G19066	0.50	**0.84**	1	7/19/2005	7/19/2005	
Ammonia-N	EPA 350.3	5G22113	0.50	ND	1	7/22/2005	7/22/2005	
Bromide	EPA 300.0	5G14039	0.50	**1.1**	1	7/14/2005	7/14/2005	
Total Cyanide	SM4500-CN-C,E	5G15075	0.025	ND	1	7/15/2005	7/18/2005	
Fluoride	EPA 300.0	5G14039	0.50	**1.8**	1	7/14/2005	7/14/2005	
Nitrate-N	EPA 300.0	5G14039	0.15	**2.7**	1	7/14/2005	7/14/2005	
Nitrite-N	EPA 300.0	5G14039	1.5	ND	10	7/14/2005	7/14/2005	RL-3
Oil & Grease	EPA 413.1	5G20078	5.0	ND	1	7/20/2005	7/20/2005	
Phenols	EPA 420.1	5G22080	0.10	ND	1	7/22/2005	7/22/2005	
Phosphorus	EPA 365.3	5G14075	0.050	**0.15**	1	7/14/2005	7/14/2005	
Residual Chlorine	EPA 330.5	5G14094	0.10	ND	1	7/14/2005	7/14/2005	
Sulfate	EPA 300.0	5G14039	5.0	**480**	10	7/14/2005	7/14/2005	
Sulfide	EPA 376.2	5G15045	0.10	ND	1	7/15/2005	7/15/2005	
Surfactants (MBAS)	SM5540-C	5G14118	0.10	ND	1	7/14/2005	7/14/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

NITROGEN, ORGANIC (Calculation)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: mg/l								
Organic Nitrogen - N	Calculation	5G25044	0.50	0.84	1	7/25/2005	7/25/2005	

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Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

DIQUAT/PARAQUAT (EPA 549.2)

Analyte	Method	Batch	Reporting Limit	Sample Result	Dilution Factor	Date Extracted	Date Analyzed	Data Qualifiers
Sample ID: IOG0857-01 (TTO - Water)								
Reporting Units: ug/l								
Diquat	EPA 549.2	C5G1809	4.0	ND	1	7/18/2005	7/18/2005	
Paraquat	EPA 549.2	C5G1809	20	ND	1	7/18/2005	7/18/2005	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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TestAmerica
ANALYTICAL TESTING CORPORATION

2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0960 • 615-726-3404 Fax

ANALYTICAL REPORT

DEL MAR ANALYTICAL, IRVINE 11405
MICHELE HARPER
17461 DERIAN, STE 100
IRVINE, CA 92614

Lab Number: 05-A102935
Sample ID: IOG0857-01
Sample Type: Ground water
Site ID:

Project: IOG0857
Project Name:
Sampler:

Date Collected: 7/13/05
Time Collected: 14:00
Date Received: 7/19/05
Time Received: 9:55

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
PESTICIDES/PCB's/HERBICIDES									
2,4-D	0.00818	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
2,4,5-T	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
2,4,5-TP	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
Dalapon	ND	mg/l	0.0200	1	7/20/05	19:04	K. Burritt	8151A	440
2,4-DB	ND	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
Dicamba	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
Dichlorprop	ND	mg/l	0.00500	1	7/20/05	19:04	K. Burritt	8151A	440
Dinoseb	ND	mg/l	0.00250	1	7/20/05	19:04	K. Burritt	8151A	440
MCPA	ND	mg/l	0.500	1	7/20/05	19:04	K. Burritt	8151A	440
MCPP	ND	mg/l	0.500	1	7/20/05	19:04	K. Burritt	8151A	440
Pentachlorophenol	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440
4-Nitrophenol	ND	mg/l	0.00050	1	7/20/05	19:04	K. Burritt	8151A	440

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
Herbicides	1000 ml	10.0 ml	7/19/05		J. Davis	8151/615

Surrogate	% Recovery	Target Range
surr DCAA	92.	51. - 136.

Sample report continued . . .

ANALYTICAL REPORT

Laboratory Number: 05-A102935
Sample ID: IOG0857-01

LABORATORY COMMENTS:
ND - Not detected at the report limit.
B = Analyte was detected in the method blank.
J = Estimated Value below Report Limit.
E = Estimated Value above the calibration limit of the instrument.
# = Recovery outside Laboratory historical or method prescribed limits.

End of Sample Report.

Del Mar Analytical

17461 Derian Ave., Suite 100, Irvine, CA 92614 (949) 261-1022 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (949) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix, AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

July 27, 2005

U.S. Filter/ Westates Carbon
P.O. Box 3308
Parker, AZ 85344

Attention: Deborah Foster

Project: Semi-Annual
TTO
Sampled: 07/13/05
Del Mar Analytical Number: IOG0857

Dear Ms. Foster:

Test America Analytical Testing Corporation performed the 8151A Herbicides analysis for the referenced project above. Please use the following cross-reference table when reviewing your results.

U.S. Filter ID	Del Mar ID	Test America ID
TTO	IOG0857-01	05-A102935

Attached is the original report from the subcontract laboratory. If you have any questions or require further assistance, please contact me at (949) 261-1022, extension 218.

Sincerely yours,
DEL MAR ANALYTICAL

Kathleen A. Robb
Project Manager

Enclosure

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

PROJECT QUALITY CONTROL DATA
Project Number: IOG0857
Project Name:
Page: 1
Laboratory Receipt Date: 7/19/05

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on an true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
PEST/PCB/HERB PARAMETERS								
2,4-D	mg/l	< 0.00006	0.00363	0.00500	73	31. - 141.	440	blank
2,4,5-T	mg/l	< 0.00003	0.00341	0.00500	68	25. - 149.	440	blank
2,4,5-TP	mg/l	< 0.00003	0.00431	0.00500	86	31. - 137.	440	blank
Dalapon	mg/l	< 0.00002	0.00018	0.00500	4#	10. - 101.	440	blank
2,4-DB	mg/l	< 0.00009	0.00702	0.00500	140	34. - 153.	440	blank
Dicamba	mg/l	< 0.00006	0.00338	0.00500	68	23. - 157.	440	blank
Dichloroprop	mg/l	< 0.00006	0.00403	0.00500	81	45. - 152.	440	blank
Dinoseb	mg/l	< 0.00005	0.00384	0.00500	77	27. - 129.	440	blank
MCPA	mg/l	< 0.00410	0.214	0.500	43	26. - 139.	440	blank
MCPP	mg/l	< 0.00720	0.539	0.500	108	24. - 164.	440	blank
Pentachlorophenol	mg/l	< 0.00003	0.00297	0.00500	59	25. - 133.	440	blank
4-Nitrophenol	mg/l	< 0.00005	< 0.00050	0.00500	N/A	21. - 133.	440	blank

Matrix Spike Duplicate

Analyte	units	Orig Val	Duplicate	RPD	Limit	Q.C. Batch
PEST/PCP/HERB PARAMETERS						
2,4-D	mg/l	0.00363	0.00408	11.67	34.	440
2,4,5-T	mg/l	0.00341	0.00381	11.08	51.	440
2,4,5-TP	mg/l	0.00431	0.00482	11.17	44.	440
Dalapon	mg/l	0.00018	0.00018	0.00	89.	440
2,4-DB	mg/l	0.00702	0.00659	6.32	33.	440
Dicamba	mg/l	0.00338	0.00369	8.77	48.	440
Dichloroprop	mg/l	0.00403	0.00455	12.12	41.	440
Dinoseb	mg/l	0.00384	0.00416	8.00	50.	440
MCPA	mg/l	0.214	0.309	36.33	50	440
MCPP	mg/l	0.539	0.596	10.04	45.	440
Pentachlorophenol	mg/l	0.00297	0.00335	12.03	49	440
4-Nitrophenol	mg/l	< 0.00050	0.00193	152.71#	55	440

Project QC continued . . .

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

PROJECT QUALITY CONTROL DATA
Project Number: IOG0857
Project Name:
Page: 2
Laboratory Receipt Date: 7/19/05

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
PEST/PCB/HERB PARAMETERS						
2,4-D	mg/l	0.00500	0.00398	80	35 - 141	440
2,4,5-T	mg/l	0.00500	0.00374	75	33 - 136	440
2,4,5 TP	mg/l	0 00500	0.00477	95	53 - 136	440
Dalapon	mg/l	0.00500	0.00025	5 #	10 - 101	440
2,4-DB	mg/l	0.00500	0.00633	127	38 - 143	440
Dicamba	mg/l	0.00500	0.00361	72	23 - 157	440
Dichloroprop	mg/l	0.00500	0.00443	89	50 - 143	440
Dinoseb	mg/l	0 00500	0.00384	77	28 - 127	440
MCPA	mg/l	0.500	0.311	62	26 - 139	440
MCPP	mg/l	0.500	0.525	105	24 - 164	440
Pentachlorophenol	mg/l	0.00500	0.00328	66	33 - 130	440
4-Nitrophenol	mg/l	0.00500	0.00364	73	23 - 125	440
surr DCAA	% Rec			102	51 136	440

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd

Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed

Project QC continued . . .

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

PROJECT QUALITY CONTROL DATA
Project Number: IOG0857
Project Name:
Page: 3
Laboratory Receipt Date: 7/19/05

PEST/PCB/HERB PARAMETERS

2,4-D	< 0.00006	mg/l	440	7/20/05	18:01
2,4,5-T	< 0.00003	mg/l	440	7/20/05	18:01
2,4,5-TP	< 0.00003	mg/l	440	7/20/05	18:01
Dalapon	< 0.00002	mg/l	440	7/20/05	18:01
2,4-DB	< 0.00009	mg/l	440	7/20/05	18:01
Dicamba	< 0.00006	mg/l	440	7/20/05	18:01
Dichloroprop	< 0.00006	mg/l	440	7/20/05	18:01
Dinoseb	< 0.00005	mg/l	440	7/20/05	18:01
MCPA	< 0.00410	mg/l	440	7/20/05	18:01
MCPP	< 0.00700	mg/l	440	7/20/05	18:01
Pentachlorophenol	< 0.00003	mg/l	440	7/20/05	18:01
4-Nitrophenol	< 0.00005	mg/l	440	7/20/05	18:01
surr-DCAA	80.	% Rec	440	7/20/05	18:01

* - Value outside Laboratory historical or method prescribed QC limits

End of Report for Project 423201

TestAmerica
ANALYTICAL TESTING CORPORATION
2960 Foster Creighton Drive • Nashville, Tennessee 37204
800-765-0980 • 615-726-3404 Fax

7/22/05

DEL MAR ANALYTICAL, IRVINE 11405
MICHELE HARPER
17461 DERIAN, STE 100
IRVINE, CA 92614

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name:
Project Number: 1OG0857.
Laboratory Project Number: 423201.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accreditation.

Page 1

Sample Identification	Lab Number	Collection Date
IOG0857-01	05-A102935	7/13/05

Sample Identification	Lab Number	Collection Date

These results relate only to the items tested.
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permission of the laboratory.

Report Approved By: Gail A Lage ______________ Report Date: 7/22/05

Johnny A. Mitchell, Laboratory Director
Michael H. Dunn, M.S., Technical Director
Pamela A. Langford, Senior Project Manager
Eric S. Smith, QA/QC Director
Sandra McMillin, Technical Services

Gail A. Lage, Senior Project Manager
Glenn L. Norton, Technical Services
Kelly S. Comstock, Technical Services
Roxanne L. Connor, Senior Project Manag
Mark Hollingsworth, Director of Project

Laboratory Certification Number: AZ0473

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Del Mar Analytical

17461 Derian Ave. Suite 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046
9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689
9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOG0857

SENDING LABORATORY:

Del Mar Analytical, Irvine
17461 Derian Avenue, Suite 100
Irvine, CA 92614
Phone: (949) 261-1022
Fax: (949) 261-1228
Project Manager: Kathleen A. Robb

RECEIVING LABORATORY:

Test America, Inc.
2960 Foster Creighton Drive
Nashville, TN 37204
Phone :800/765-0980
Fax: 615/726-0954

Standard TAT is requested unless specific due date is requested => Due Date:________________ Initials:________

Analysis	Expiration	Comments
Sample ID: IOG0857-01 Water	**Sampled: 07/13/05 14:00**	
8151A (Herbicides)	07/20/05 14:00	Needs Arizona Certification

Containers Supplied:
1 L Amber (IOG0857-01Z)

Scanned + emailed
to Mary @ NCA
to forward to
TA. Nashville.

SAMPLE INTEGRITY:

All containers intact:	☐ Yes ☐ No	Sample labels/COC agree:	☐ Yes ☐ No	Samples Received On Ice::	☐ Yes ☐ No
Custody Seals Present:	☐ Yes ☐ No	Samples Preserved Properly:	☐ Yes ☐ No	Samples Received at (temp):	________

Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time

Del Mar Analytical

17461 Derian Ave. Suite 100. Irvine, CA 92614	Ph (949) 261-1022	Fax (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324	Ph (909) 370-4667	Fax (909) 370-1046
9484 Chesapeake Drive, Suite 805, San Diego, CA 92123	Ph (619) 505-9596	Fax (619) 505-9689
9830 South 51st Street, Suite B-120, Phoenix, AZ 85044	Ph (480) 785-0043	Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120	Ph (702) 798-3620	Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOG0857

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine 17461 Derian Avenue. Suite 100 Irvine, CA 92614 Phone: (949) 261-1022 Fax: (949) 261-1228 Project Manager: Kathleen A. Robb	Test America, Inc. 2960 Foster Creighton Drive Nashville, TN 37204 Phone :800/765-0980 Fax: 615/726-0954

Standard TAT is requested unless specific due date is requested => **Due Date:**________________ **Initials:**________

Analysis	Expiration	Comments
Sample ID: IOG0857-01 Water	**Sampled: 07/13/05 14:00**	
8151A (Herbicides)	07/20/05 14:00	Needs Arizona Certification

Containers Supplied:

1 L Amber (IOG0857-01Z)

SAMPLE INTEGRITY:

All containers intact:	☐ Yes ☐ No	Sample labels/COC agree:	☐ Yes ☐ No	Samples Received On Ice::	☐ Yes ☐ No
Custody Seals Present:	☐ Yes ☐ No	Samples Preserved Properly:	☐ Yes ☐ No	Samples Received at (temp):	________

Released By	Date	Time	Received By	Date	Time
Released By	Date	Time	Received By	Date	Time

U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

SHORT HOLD TIME DETAIL REPORT

	Hold Time (in days)	Date/Time Sampled	Date/Time Received	Date/Time Extracted	Date/Time Analyzed
Sample ID: TTO (IOG0857-01) - Water					
EPA 300.0	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 16:00	07/14/2005 16:09
Nitrite-N				07/14/2005 16:00	07/14/2005 17:10
EPA 330.5	1	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 16:08	07/14/2005 16:08
SM2120B	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 14:00	07/14/2005 15:00
SM5540-C	2	07/13/2005 14:00	07/14/2005 10:10	07/14/2005 23:00	07/14/2005 23:35

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: ITO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5030B/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G16003 Extracted: 07/16/05										
Blank Analyzed: 07/16/2005 (5G16003-BLK1)										
Acrolein	ND	50	ug/l							
Acrylonitrile	ND	50	ug/l							
2-Chloroethyl vinyl ether	ND	5.0	ug/l							
Surrogate: Dibromofluoromethane	*23.9*		*ug/l*	*25.0*		*96*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.2*		*ug/l*	*25.0*		*97*	*80-120*			
LCS Analyzed: 07/16/2005 (5G16003-BS1)										
2-Chloroethyl vinyl ether	29.4	5.0	ug/l	25.0		118	25-170			
Surrogate: Dibromofluoromethane	*24.5*		*ug/l*	*25.0*		*98*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.8*		*ug/l*	*25.0*		*99*	*80-120*			
Matrix Spike Analyzed: 07/16/2005 (5G16003-MS1)					**Source: IOG0808-01**					
2-Chloroethyl vinyl ether	27.1	5.0	ug/l	25.0	ND	108	25-170			
Surrogate: Dibromofluoromethane	*24.7*		*ug/l*	*25.0*		*99*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/l*	*25.0*		*99*	*80-120*			
Matrix Spike Dup Analyzed: 07/16/2005 (5G16003-MSD1)					**Source: IOG0808-01**					
2-Chloroethyl vinyl ether	28.2	5.0	ug/l	25.0	ND	113	25-170	4	25	
Surrogate: Dibromofluoromethane	*25.3*		*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: Toluene-d8	*25.8*		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.4*		*ug/l*	*25.0*		*98*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Blank Analyzed: 07/21/2005 (5G21019-BLK1)										
Benzene	ND	2.0	ug/l							
Bromobenzene	ND	5.0	ug/l							
Bromochloromethane	ND	5.0	ug/l							
Bromodichloromethane	ND	2.0	ug/l							
Bromoform	ND	5.0	ug/l							
Bromomethane	ND	5.0	ug/l							
n-Butylbenzene	ND	5.0	ug/l							
sec-Butylbenzene	ND	5.0	ug/l							
tert-Butylbenzene	ND	5.0	ug/l							
Carbon Disulfide	ND	5.0	ug/l							
Carbon tetrachloride	ND	5.0	ug/l							
Chlorobenzene	ND	2.0	ug/l							
Chloroethane	ND	5.0	ug/l							
Chloroform	ND	2.0	ug/l							
Chloromethane	ND	5.0	ug/l							
2-Chlorotoluene	ND	5.0	ug/l							
4-Chlorotoluene	ND	5.0	ug/l							
Dibromochloromethane	ND	2.0	ug/l							
1,2-Dibromo-3-chloropropane	ND	5.0	ug/l							
1,2-Dibromoethane (EDB)	ND	2.0	ug/l							
Dibromomethane	ND	2.0	ug/l							
1,2-Dichlorobenzene	ND	2.0	ug/l							
1,3-Dichlorobenzene	ND	2.0	ug/l							
1,4-Dichlorobenzene	ND	2.0	ug/l							
Dichlorodifluoromethane	ND	5.0	ug/l							
1,1-Dichloroethane	ND	2.0	ug/l							
1,2-Dichloroethane	ND	2.0	ug/l							
1,1-Dichloroethene	ND	5.0	ug/l							
cis-1,2-Dichloroethene	ND	2.0	ug/l							
trans-1,2-Dichloroethene	ND	2.0	ug/l							
1,2-Dichloropropane	ND	2.0	ug/l							
1,3-Dichloropropane	ND	2.0	ug/l							
2,2-Dichloropropane	ND	2.0	ug/l							
1,1-Dichloropropene	ND	2.0	ug/l							
cis-1,3-Dichloropropene	ND	2.0	ug/l							

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Blank Analyzed: 07/21/2005 (5G21019-BLK1)										
trans-1,3-Dichloropropene	ND	2.0	ug/l							
Ethylbenzene	ND	2.0	ug/l							
Hexachlorobutadiene	ND	5.0	ug/l							
Isopropylbenzene	ND	2.0	ug/l							
p-Isopropyltoluene	ND	2.0	ug/l							
Methylene chloride	ND	5.0	ug/l							
Naphthalene	ND	5.0	ug/l							
n-Propylbenzene	ND	2.0	ug/l							
Styrene	ND	2.0	ug/l							
1,1,1,2-Tetrachloroethane	ND	5.0	ug/l							
1,1,2,2-Tetrachloroethane	ND	2.0	ug/l							
Tetrachloroethene	ND	2.0	ug/l							
Toluene	ND	2.0	ug/l							
1,2,3-Trichlorobenzene	ND	5.0	ug/l							
1,2,4-Trichlorobenzene	ND	5.0	ug/l							
1,1,1-Trichloroethane	ND	2.0	ug/l							
1,1,2-Trichloroethane	ND	2.0	ug/l							
Trichloroethene	ND	2.0	ug/l							
Trichlorofluoromethane	ND	5.0	ug/l							
1,2,3-Trichloropropane	ND	10	ug/l							
1,2,4-Trimethylbenzene	ND	2.0	ug/l							
1,3,5-Trimethylbenzene	ND	2.0	ug/l							
Vinyl acetate	ND	5.0	ug/l							
Vinyl chloride	ND	5.0	ug/l							
o-Xylene	ND	2.0	ug/l							
m,p-Xylenes	ND	2.0	ug/l							
Surrogate: Dibromofluoromethane	*24.8*		*ug/l*	*25.0*		*99*	*80-120*			
Surrogate: Toluene-d8	*25.4*		*ug/l*	*25.0*		*102*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.7*		*ug/l*	*25.0*		*95*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
LCS Analyzed: 07/21/2005 (5G21019-BS1)										
Benzene	20.3	2.0	ug/l	25.0		81	65-120			
Bromobenzene	21.5	5.0	ug/l	25.0		86	70-120			
Bromochloromethane	22.5	5.0	ug/l	25.0		90	65-130			
Bromodichloromethane	20.0	2.0	ug/l	25.0		80	65-135			
Bromoform	19.3	5.0	ug/l	25.0		77	50-130			
Bromomethane	19.4	5.0	ug/l	25.0		78	60-140			
n-Butylbenzene	20.9	5.0	ug/l	25.0		84	70-125			
sec-Butylbenzene	20.0	5.0	ug/l	25.0		80	70-125			
tert-Butylbenzene	20.8	5.0	ug/l	25.0		83	70-125			
Carbon Disulfide	20.9	5.0	ug/l	25.0		84	50-130			
Carbon tetrachloride	19.9	5.0	ug/l	25.0		80	65-140			
Chlorobenzene	20.5	2.0	ug/l	25.0		82	70-125			
Chloroethane	19.5	5.0	ug/l	25.0		78	55-140			
Chloroform	20.9	2.0	ug/l	25.0		84	65-130			
Chloromethane	16.6	5.0	ug/l	25.0		66	40-140			
2-Chlorotoluene	20.9	5.0	ug/l	25.0		84	70-125			
4-Chlorotoluene	20.8	5.0	ug/l	25.0		83	70-125			
Dibromochloromethane	21.4	2.0	ug/l	25.0		86	65-140			
1,2-Dibromo-3-chloropropane	20.2	5.0	ug/l	25.0		81	45-135			
1,2-Dibromoethane (EDB)	22.2	2.0	ug/l	25.0		89	70-125			
Dibromomethane	22.2	2.0	ug/l	25.0		89	65-130			
1,2-Dichlorobenzene	20.3	2.0	ug/l	25.0		81	70-120			
1,3-Dichlorobenzene	19.8	2.0	ug/l	25.0		79	70-125			
1,4-Dichlorobenzene	20.1	2.0	ug/l	25.0		80	70-125			
Dichlorodifluoromethane	13.5	5.0	ug/l	25.0		54	25-155			
1,1-Dichloroethane	21.4	2.0	ug/l	25.0		86	65-130			
1,2-Dichloroethane	20.6	2.0	ug/l	25.0		82	60-140			
1,1-Dichloroethene	20.8	5.0	ug/l	25.0		83	70-130			
cis-1,2-Dichloroethene	20.5	2.0	ug/l	25.0		82	65-125			
trans-1,2-Dichloroethene	20.8	2.0	ug/l	25.0		83	65-130			
1,2-Dichloropropane	21.6	2.0	ug/l	25.0		86	65-125			
1,3-Dichloropropane	22.0	2.0	ug/l	25.0		88	65-125			
2,2-Dichloropropane	21.8	2.0	ug/l	25.0		87	60-145			
1,1-Dichloropropene	20.1	2.0	ug/l	25.0		80	70-130			
cis-1,3-Dichloropropene	21.6	2.0	ug/l	25.0		86	70-130			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO
Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
LCS Analyzed: 07/21/2005 (5G21019-BS1)										
trans-1,3-Dichloropropene	21.9	2.0	ug/l	25.0		88	65-130			
Ethylbenzene	20.6	2.0	ug/l	25.0		82	70-125			
Hexachlorobutadiene	17.0	5.0	ug/l	25.0		68	60-135			
Isopropylbenzene	22.5	2.0	ug/l	25.0		90	70-125			
p-Isopropyltoluene	19.2	2.0	ug/l	25.0		77	70-125			
Methylene chloride	22.6	5.0	ug/l	25.0		90	60-130			
Naphthalene	20.3	5.0	ug/l	25.0		81	50-140			
n-Propylbenzene	21.9	2.0	ug/l	25.0		88	70-125			
Styrene	22.4	2.0	ug/l	25.0		90	70-130			
1,1,1,2-Tetrachloroethane	21.0	5.0	ug/l	25.0		84	70-135			
1,1,2,2-Tetrachloroethane	25.8	2.0	ug/l	25.0		103	55-130			
Tetrachloroethene	19.4	2.0	ug/l	25.0		78	65-125			
Toluene	21.2	2.0	ug/l	25.0		85	70-125			
1,2,3-Trichlorobenzene	19.5	5.0	ug/l	25.0		78	60-130			
1,2,4-Trichlorobenzene	19.5	5.0	ug/l	25.0		78	65-135			
1,1,1-Trichloroethane	20.6	2.0	ug/l	25.0		82	65-135			
1,1,2-Trichloroethane	22.5	2.0	ug/l	25.0		90	65-125			
Trichloroethene	19.8	2.0	ug/l	25.0		79	70-125			
Trichlorofluoromethane	18.3	5.0	ug/l	25.0		73	60-140			
1,2,3-Trichloropropane	24.5	10	ug/l	25.0		98	55-130			
1,2,4-Trimethylbenzene	19.6	2.0	ug/l	25.0		78	70-125			
1,3,5-Trimethylbenzene	21.0	2.0	ug/l	25.0		84	70-125			
Vinyl acetate	15.6	5.0	ug/l	25.0		62	45-145			
Vinyl chloride	17.6	5.0	ug/l	25.0		70	50-130			
o-Xylene	20.4	2.0	ug/l	25.0		82	70-125			
m,p-Xylenes	40.0	2.0	ug/l	50.0		80	70-125			
Surrogate: Dibromofluoromethane	*25.0*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*25.7*		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.7*		*ug/l*	*25.0*		*99*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Analyzed: 07/21/2005 (5G21019-MS1)					**Source: IOG0857-01**					
Benzene	25.1	2.0	ug/l	25.0	ND	100	60-125			
Bromobenzene	25.4	5.0	ug/l	25.0	ND	102	65-125			
Bromochloromethane	27.3	5.0	ug/l	25.0	ND	109	60-135			
Bromodichloromethane	24.6	2.0	ug/l	25.0	ND	98	65-135			
Bromoform	23.0	5.0	ug/l	25.0	2.6	82	50-135			
Bromomethane	25.2	5.0	ug/l	25.0	ND	101	50-145			
n-Butylbenzene	25.7	5.0	ug/l	25.0	ND	103	65-135			
sec-Butylbenzene	24.3	5.0	ug/l	25.0	ND	97	65-125			
tert-Butylbenzene	25.0	5.0	ug/l	25.0	ND	100	65-130			
Carbon Disulfide	23.4	5.0	ug/l	25.0	ND	94	40-140			
Carbon tetrachloride	25.1	5.0	ug/l	25.0	ND	100	65-140			
Chlorobenzene	25.0	2.0	ug/l	25.0	ND	100	70-125			
Chloroethane	24.9	5.0	ug/l	25.0	ND	100	50-140			
Chloroform	25.6	2.0	ug/l	25.0	ND	102	65-135			
Chloromethane	20.5	5.0	ug/l	25.0	ND	82	35-140			
2-Chlorotoluene	24.9	5.0	ug/l	25.0	ND	100	65-135			
4-Chlorotoluene	25.0	5.0	ug/l	25.0	ND	100	65-135			
Dibromochloromethane	26.2	2.0	ug/l	25.0	ND	105	60-140			
1,2-Dibromo-3-chloropropane	23.1	5.0	ug/l	25.0	ND	92	40-150			
1,2-Dibromoethane (EDB)	26.5	2.0	ug/l	25.0	ND	106	65-130			
Dibromomethane	26.1	2.0	ug/l	25.0	ND	104	60-135			
1,2-Dichlorobenzene	24.6	2.0	ug/l	25.0	ND	98	70-125			
1,3-Dichlorobenzene	24.2	2.0	ug/l	25.0	ND	97	70-125			
1,4-Dichlorobenzene	24.4	2.0	ug/l	25.0	ND	98	70-125			
Dichlorodifluoromethane	18.4	5.0	ug/l	25.0	ND	74	15-155			
1,1-Dichloroethane	26.3	2.0	ug/l	25.0	ND	105	60-130			
1,2-Dichloroethane	24.9	2.0	ug/l	25.0	ND	100	60-140			
1,1-Dichloroethene	25.3	5.0	ug/l	25.0	ND	101	60-135			
cis-1,2-Dichloroethene	25.2	2.0	ug/l	25.0	ND	101	60-130			
trans-1,2-Dichloroethene	25.8	2.0	ug/l	25.0	ND	103	60-135			
1,2-Dichloropropane	26.1	2.0	ug/l	25.0	ND	104	60-125			
1,3-Dichloropropane	26.1	2.0	ug/l	25.0	ND	104	60-135			
2,2-Dichloropropane	27.8	2.0	ug/l	25.0	ND	111	60-145			
1,1-Dichloropropene	24.9	2.0	ug/l	25.0	ND	100	65-135			
cis-1,3-Dichloropropene	26.0	2.0	ug/l	25.0	ND	104	65-135			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Analyzed: 07/21/2005 (5G21019-MS1)					**Source: IOG0857-01**					
trans-1,3-Dichloropropene	25.9	2.0	ug/l	25.0	ND	104	65-140			
Ethylbenzene	25.0	2.0	ug/l	25.0	ND	100	65-130			
Hexachlorobutadiene	20.6	5.0	ug/l	25.0	ND	82	60-135			
Isopropylbenzene	26.2	2.0	ug/l	25.0	ND	105	65-130			
p-Isopropyltoluene	23.2	2.0	ug/l	25.0	ND	93	65-125			
Methylene chloride	28.0	5.0	ug/l	25.0	ND	112	55-130			
Naphthalene	22.9	5.0	ug/l	25.0	ND	92	45-145			
n-Propylbenzene	25.9	2.0	ug/l	25.0	ND	104	65-130			
Styrene	16.4	2.0	ug/l	25.0	ND	66	45-145			
1,1,1,2-Tetrachloroethane	25.6	5.0	ug/l	25.0	ND	102	65-140			
1,1,2,2-Tetrachloroethane	28.9	2.0	ug/l	25.0	ND	116	55-140			
Tetrachloroethene	24.5	2.0	ug/l	25.0	ND	98	60-130			
Toluene	25.5	2.0	ug/l	25.0	ND	102	65-125			
1,2,3-Trichlorobenzene	22.8	5.0	ug/l	25.0	ND	91	55-135			
1,2,4-Trichlorobenzene	23.6	5.0	ug/l	25.0	ND	94	60-135			
1,1,1-Trichloroethane	24.9	2.0	ug/l	25.0	ND	100	65-140			
1,1,2-Trichloroethane	26.2	2.0	ug/l	25.0	ND	105	60-130			
Trichloroethene	24.3	2.0	ug/l	25.0	ND	97	60-125			
Trichlorofluoromethane	23.2	5.0	ug/l	25.0	ND	93	55-145			
1,2,3-Trichloropropane	27.8	10	ug/l	25.0	ND	111	50-135			
1,2,4-Trimethylbenzene	23.5	2.0	ug/l	25.0	ND	94	55-130			
1,3,5-Trimethylbenzene	25.0	2.0	ug/l	25.0	ND	100	65-130			
Vinyl acetate	19.8	5.0	ug/l	25.0	ND	79	40-150			
Vinyl chloride	19.2	5.0	ug/l	25.0	ND	77	40-135			
o-Xylene	24.5	2.0	ug/l	25.0	ND	98	60-125			
m,p-Xylenes	48.8	2.0	ug/l	50.0	ND	98	60-130			
Surrogate: Dibromofluoromethane	*25.0*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*25.7*		*ug/l*	*25.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.6*		*ug/l*	*25.0*		*98*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: ITO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Dup Analyzed: 07/21/2005 (5G21019-MSD1)					**Source: IOG0857-01**					
Benzene	23.8	2.0	ug/l	25.0	ND	95	60-125	5	20	
Bromobenzene	23.3	5.0	ug/l	25.0	ND	93	65-125	9	20	
Bromochloromethane	26.0	5.0	ug/l	25.0	ND	104	60-135	5	25	
Bromodichloromethane	22.7	2.0	ug/l	25.0	ND	91	65-135	8	20	
Bromoform	22.5	5.0	ug/l	25.0	2.6	80	50-135	2	25	
Bromomethane	23.4	5.0	ug/l	25.0	ND	94	50-145	7	25	
n-Butylbenzene	25.0	5.0	ug/l	25.0	ND	100	65-135	3	20	
sec-Butylbenzene	23.6	5.0	ug/l	25.0	ND	94	65-125	3	20	
tert-Butylbenzene	24.0	5.0	ug/l	25.0	ND	96	65-130	4	20	
Carbon Disulfide	23.8	5.0	ug/l	25.0	ND	95	40-140	2	20	
Carbon tetrachloride	23.6	5.0	ug/l	25.0	ND	94	65-140	6	25	
Chlorobenzene	23.7	2.0	ug/l	25.0	ND	95	70-125	5	20	
Chloroethane	23.5	5.0	ug/l	25.0	ND	94	50-140	6	25	
Chloroform	24.5	2.0	ug/l	25.0	ND	98	65-135	4	20	
Chloromethane	19.4	5.0	ug/l	25.0	ND	78	35-140	6	25	
2-Chlorotoluene	23.2	5.0	ug/l	25.0	ND	93	65-135	7	20	
4-Chlorotoluene	23.3	5.0	ug/l	25.0	ND	93	65-135	7	20	
Dibromochloromethane	24.8	2.0	ug/l	25.0	ND	99	60-140	5	25	
1,2-Dibromo-3-chloropropane	23.8	5.0	ug/l	25.0	ND	95	40-150	3	30	
1,2-Dibromoethane (EDB)	25.2	2.0	ug/l	25.0	ND	101	65-130	5	25	
Dibromomethane	25.0	2.0	ug/l	25.0	ND	100	60-135	4	25	
1,2-Dichlorobenzene	23.6	2.0	ug/l	25.0	ND	94	70-125	4	20	
1,3-Dichlorobenzene	22.9	2.0	ug/l	25.0	ND	92	70-125	6	20	
1,4-Dichlorobenzene	23.0	2.0	ug/l	25.0	ND	92	70-125	6	20	
Dichlorodifluoromethane	17.4	5.0	ug/l	25.0	ND	70	15-155	6	30	
1,1-Dichloroethane	25.2	2.0	ug/l	25.0	ND	101	60-130	4	20	
1,2-Dichloroethane	23.3	2.0	ug/l	25.0	ND	93	60-140	7	20	
1,1-Dichloroethene	23.7	5.0	ug/l	25.0	ND	95	60-135	7	20	
cis-1,2-Dichloroethene	24.1	2.0	ug/l	25.0	ND	96	60-130	4	20	
trans-1,2-Dichloroethene	24.8	2.0	ug/l	25.0	ND	99	60-135	4	20	
1,2-Dichloropropane	24.6	2.0	ug/l	25.0	ND	98	50-125	6	20	
1,3-Dichloropropane	25.2	2.0	ug/l	25.0	ND	101	60-135	4	25	
2,2-Dichloropropane	28.5	2.0	ug/l	25.0	ND	114	60-145	2	25	
1,1-Dichloropropene	23.4	2.0	ug/l	25.0	ND	94	65-135	6	20	
cis-1,3-Dichloropropene	24.1	2.0	ug/l	25.0	ND	96	65-135	8	20	

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

VOLATILE ORGANICS by GC/MS (EPA 5035/8260B)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G21019 Extracted: 07/21/05										
Matrix Spike Dup Analyzed: 07/21/2005 (5G21019-MSD1)					**Source: IOG0857-01**					
trans-1,3-Dichloropropene	24.1	2.0	ug/l	25.0	ND	96	65-140	7	25	
Ethylbenzene	23.8	2.0	ug/l	25.0	ND	95	65-130	5	20	
Hexachlorobutadiene	20.9	5.0	ug/l	25.0	ND	84	60-135	1	20	
Isopropylbenzene	24.8	2.0	ug/l	25.0	ND	99	65-130	5	20	
p-Isopropyltoluene	22.6	2.0	ug/l	25.0	ND	90	65-125	3	20	
Methylene chloride	26.4	5.0	ug/l	25.0	ND	106	55-130	6	20	
Naphthalene	24.6	5.0	ug/l	25.0	ND	98	45-145	7	30	
n-Propylbenzene	24.4	2.0	ug/l	25.0	ND	98	65-130	6	20	
Styrene	14.0	2.0	ug/l	25.0	ND	56	45-145	16	30	
1,1,1,2-Tetrachloroethane	24.2	5.0	ug/l	25.0	ND	97	65-140	6	20	
,1,2,2-Tetrachloroethane	28.7	2.0	ug/l	25.0	ND	115	55-140	1	30	
Tetrachloroethene	23.3	2.0	ug/l	25.0	ND	93	60-130	5	20	
Toluene	23.9	2.0	ug/l	25.0	ND	96	65-125	6	20	
1,2,3-Trichlorobenzene	23.5	5.0	ug/l	25.0	ND	94	55-135	3	20	
1,2,4-Trichlorobenzene	23.6	5.0	ug/l	25.0	ND	94	60-135	0	20	
1,1,1-Trichloroethane	24.3	2.0	ug/l	25.0	ND	97	65-140	2	20	
1,1,2-Trichloroethane	25.0	2.0	ug/l	25.0	ND	100	60-130	5	25	
Trichloroethene	22.5	2.0	ug/l	25.0	ND	90	60-125	8	20	
Trichlorofluoromethane	21.8	5.0	ug/l	25.0	ND	87	55-145	6	25	
1,2,3-Trichloropropane	27.0	10	ug/l	25.0	ND	108	50-135	3	30	
1,2,4-Trimethylbenzene	22.3	2.0	ug/l	25.0	ND	89	55-130	5	25	
1,3,5-Trimethylbenzene	23.6	2.0	ug/l	25.0	ND	94	65-130	6	20	
Vinyl acetate	19.9	5.0	ug/l	25.0	ND	80	40-150	1	30	
Vinyl chloride	18.2	5.0	ug/l	25.0	ND	73	40-135	5	30	
o-Xylene	23.1	2.0	ug/l	25.0	ND	92	60-125	6	20	
m,p-Xylenes	46.6	2.0	ug/l	50.0	ND	93	60-130	5	25	
Surrogate: Dibromofluoromethane	*24.9*		*ug/l*	*25.0*		*100*	*80-120*			
Surrogate: Toluene-d8	*25.2*		*ug/l*	*25.0*		*101*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*24.5*		*ug/l*	*25.0*		*98*	*80-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
Acenaphthene	ND	10	ug/l							
Acenaphthylene	ND	10	ug/l							
Aniline	ND	10	ug/l							
Anthracene	ND	10	ug/l							
Benzidine	ND	20	ug/l							
Benzoic acid	ND	20	ug/l							
Benzo(a)anthracene	ND	10	ug/l							
Benzo(b)fluoranthene	ND	10	ug/l							
Benzo(k)fluoranthene	ND	10	ug/l							
Benzo(g,h,i)perylene	ND	10	ug/l							
Benzo(a)pyrene	ND	10	ug/l							
Benzyl alcohol	ND	20	ug/l							
Bis(2-chloroethoxy)methane	ND	10	ug/l							
Bis(2-chloroethyl)ether	ND	10	ug/l							
Bis(2-chloroisopropyl)ether	ND	10	ug/l							
Bis(2-ethylhexyl)phthalate	ND	50	ug/l							
4-Bromophenyl phenyl ether	ND	10	ug/l							
Butyl benzyl phthalate	ND	20	ug/l							
4-Chloroaniline	ND	10	ug/l							
2-Chloronaphthalene	ND	10	ug/l							
4-Chloro-3-methylphenol	ND	20	ug/l							
2-Chlorophenol	ND	10	ug/l							
4-Chlorophenyl phenyl ether	ND	10	ug/l							
Chrysene	ND	10	ug/l							
Dibenz(a,h)anthracene	ND	20	ug/l							
Dibenzofuran	ND	10	ug/l							
Di-n-butyl phthalate	ND	20	ug/l							
1,3-Dichlorobenzene	ND	10	ug/l							
1,4-Dichlorobenzene	ND	10	ug/l							
1,2-Dichlorobenzene	ND	10	ug/l							
3,3-Dichlorobenzidine	ND	20	ug/l							
2,4-Dichlorophenol	ND	10	ug/l							
Diethyl phthalate	ND	10	ug/l							
2,4-Dimethylphenol	ND	20	ug/l							
Dimethyl phthalate	ND	10	ug/l							

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
4,6-Dinitro-2-methylphenol	ND	20	ug/l							
2,4-Dinitrophenol	ND	20	ug/l							
2,4-Dinitrotoluene	ND	10	ug/l							
2,6-Dinitrotoluene	ND	10	ug/l							
Di-n-octyl phthalate	ND	20	ug/l							
Fluoranthene	ND	10	ug/l							
Fluorene	ND	10	ug/l							
Hexachlorobenzene	ND	10	ug/l							
Hexachlorobutadiene	ND	10	ug/l							
Hexachlorocyclopentadiene	ND	20	ug/l							
Hexachloroethane	ND	10	ug/l							
Indeno(1,2,3-cd)pyrene	ND	20	ug/l							
Isophorone	ND	10	ug/l							
2-Methylnaphthalene	ND	10	ug/l							
2-Methylphenol	ND	10	ug/l							
4-Methylphenol	ND	10	ug/l							
Naphthalene	ND	10	ug/l							
2-Nitroaniline	ND	20	ug/l							
3-Nitroaniline	ND	20	ug/l							
4-Nitroaniline	ND	20	ug/l							
Nitrobenzene	ND	20	ug/l							
2-Nitrophenol	ND	10	ug/l							
4-Nitrophenol	ND	20	ug/l							
N-Nitrosodiphenylamine	ND	10	ug/l							
N-Nitroso-di-n-propylamine	ND	10	ug/l							
Pentachlorophenol	ND	20	ug/l							
Phenanthrene	ND	10	ug/l							
Phenol	ND	10	ug/l							
Pyrene	ND	10	ug/l							
1,2,4-Trichlorobenzene	ND	10	ug/l							
2,4,5-Trichlorophenol	ND	20	ug/l							
2,4,6-Trichlorophenol	ND	20	ug/l							
N-Nitrosodimethylamine	ND	20	ug/l							
1,2-Diphenylhydrazine/Azobenzene	ND	20	ug/l							
Surrogate: 2-Fluorophenol	*121*		*ug/l*	*200*		*60*	*30-120*			

Del Mar Analytical, Irvine
Kathleen A. Robb
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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
Blank Analyzed: 07/20/2005 (5G17017-BLK1)										
Surrogate: Phenol-d6	*137*		*ug/l*	*200*		*68*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*104*		*ug/l*	*200*		*52*	*45-120*			
Surrogate: Nitrobenzene-d5	*71.7*		*ug/l*	*100*		*72*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*77.0*		*ug/l*	*100*		*77*	*45-120*			
Surrogate: Terphenyl-d14	*78.7*		*ug/l*	*100*		*79*	*45-120*			
LCS Analyzed: 07/20/2005 (5G17017-BS1)										M-NR1
Acenaphthene	86.7	10	ug/l	100		87	55-120			
Acenaphthylene	89.0	10	ug/l	100		89	55-120			
Aniline	81.3	10	ug/l	100		81	35-120			
Anthracene	79.9	10	ug/l	100		80	55-120			
Benzidine	173	20	ug/l	100		173	20-160			L
Benzoic acid	69.7	20	ug/l	100		70	35-120			
Benzo(a)anthracene	81.7	10	ug/l	100		82	60-120			
Benzo(b)fluoranthene	89.1	10	ug/l	100		89	50-120			
Benzo(k)fluoranthene	89.2	10	ug/l	100		89	50-120			
Benzo(g,h,i)perylene	93.7	10	ug/l	100		94	40-125			
Benzo(a)pyrene	77.0	10	ug/l	100		77	55-120			
Benzyl alcohol	58.4	20	ug/l	100		58	45-120			
Bis(2-chloroethoxy)methane	84.1	10	ug/l	100		84	55-120			
Bis(2-chloroethyl)ether	83.6	10	ug/l	100		84	50-120			
Bis(2-chloroisopropyl)ether	84.8	10	ug/l	100		85	45-120			
Bis(2-ethylhexyl)phthalate	83.4	50	ug/l	100		83	60-130			
4-Bromophenyl phenyl ether	85.3	10	ug/l	100		85	50-120			
Butyl benzyl phthalate	85.2	20	ug/l	100		85	55-125			
4-Chloroaniline	78.4	10	ug/l	100		78	50-120			
2-Chloronaphthalene	79.5	10	ug/l	100		80	55-120			
4-Chloro-3-methylphenol	84.0	20	ug/l	100		84	60-120			
2-Chlorophenol	77.6	10	ug/l	100		78	45-120			
4-Chlorophenyl phenyl ether	89.9	10	ug/l	100		90	55-120			
Chrysene	87.0	10	ug/l	100		87	60-120			
Dibenz(a,h)anthracene	96.1	20	ug/l	100		96	45-130			
Dibenzofuran	85.1	10	ug/l	100		85	60-120			
Di-n-butyl phthalate	76.3	20	ug/l	100		76	55-125			
1,3-Dichlorobenzene	74.2	10	ug/l	100		74	35-120			
1,4-Dichlorobenzene	72.9	10	ug/l	100		73	35-120			

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Analyzed: 07/20/2005 (5G17017-BS1)										M-NR1
1,2-Dichlorobenzene	74.8	10	ug/l	100		75	35-120			
3,3-Dichlorobenzidine	90.4	20	ug/l	100		90	45-130			
2,4-Dichlorophenol	77.7	10	ug/l	100		78	55-120			
Diethyl phthalate	86.1	10	ug/l	100		86	55-120			
2,4-Dimethylphenol	63.8	20	ug/l	100		64	30-120			
Dimethyl phthalate	84.3	10	ug/l	100		84	60-120			
4,6-Dinitro-2-methylphenol	85.2	20	ug/l	100		85	50-120			
2,4-Dinitrophenol	89.2	20	ug/l	100		89	40-120			
2,4-Dinitrotoluene	93.9	10	ug/l	100		94	60-120			
2,6-Dinitrotoluene	81.3	10	ug/l	100		81	60-120			
Di-n-octyl phthalate	84.2	20	ug/l	100		84	60-130			
Fluoranthene	82.0	10	ug/l	100		82	55-120			
Fluorene	89.0	10	ug/l	100		89	60-120			
Hexachlorobenzene	85.7	10	ug/l	100		86	50-120			
Hexachlorobutadiene	76.7	10	ug/l	100		77	40-120			
Hexachlorocyclopentadiene	90.5	20	ug/l	100		90	15-120			
Hexachloroethane	76.3	10	ug/l	100		76	35-120			
Indeno(1,2,3-cd)pyrene	90.3	20	ug/l	100		90	40-130			
Isophorone	82.6	10	ug/l	100		83	50-120			
2-Methylnaphthalene	81.0	10	ug/l	100		81	50-120			
3-Methylphenol	79.4	10	ug/l	100		79	45-120			
4-Methylphenol	80.8	10	ug/l	100		81	45-120			
Naphthalene	78.8	10	ug/l	100		79	50-120			
2-Nitroaniline	84.6	20	ug/l	100		85	60-120			
3-Nitroaniline	94.0	20	ug/l	100		94	55-120			
4-Nitroaniline	93.5	20	ug/l	100		94	50-125			
Nitrobenzene	79.1	20	ug/l	100		79	50-120			
2-Nitrophenol	82.1	10	ug/l	100		82	55-120			
4-Nitrophenol	78.4	20	ug/l	100		78	45-120			
N-Nitrosodiphenylamine	86.3	10	ug/l	100		86	55-120			
N-Nitroso-di-n-propylamine	88.8	10	ug/l	100		89	45-120			
Pentachlorophenol	91.4	20	ug/l	100		91	50-120			
Phenanthrene	80.2	10	ug/l	100		80	55-120			
Phenol	77.5	10	ug/l	100		78	45-120			
Pyrene	87.4	10	ug/l	100		87	50-120			

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SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Analyzed: 07/20/2005 (5G17017-BS1)										**M-NR1**
1,2,4-Trichlorobenzene	75.1	10	ug/l	100		75	45-120			
2,4,5-Trichlorophenol	89.1	20	ug/l	100		89	60-120			
2,4,6-Trichlorophenol	80.8	20	ug/l	100		81	60-120			
N-Nitrosodimethylamine	84.9	20	ug/l	100		85	40-120			
1,2-Diphenylhydrazine/Azobenzene	86.6	20	ug/l	100		87	60-120			
Surrogate: 2-Fluorophenol	*148*		*ug/l*	*200*		*74*	*30-120*			
Surrogate: Phenol-d6	*161*		*ug/l*	*200*		*80*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*181*		*ug/l*	*200*		*90*	*45-120*			
Surrogate: Nitrobenzene-d5	*80.3*		*ug/l*	*100*		*80*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*81.7*		*ug/l*	*100*		*82*	*45-120*			
Surrogate: Terphenyl-d14	*86.2*		*ug/l*	*100*		*86*	*45-120*			
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
Acenaphthene	84.0	10	ug/l	100		84	55-120	3	20	
Acenaphthylene	87.2	10	ug/l	100		87	55-120	2	20	
Aniline	76.7	10	ug/l	100		77	35-120	6	25	
Anthracene	80.8	10	ug/l	100		81	55-120	1	20	
Benzidine	99.1	20	ug/l	100		99	20-160	54	35	*R-2*
Benzoic acid	87.7	20	ug/l	100		88	35-120	23	30	
Benzo(a)anthracene	86.0	10	ug/l	100		86	60-120	5	20	
Benzo(b)fluoranthene	88.7	10	ug/l	100		89	50-120	0	25	
Benzo(k)fluoranthene	86.9	10	ug/l	100		87	50-120	3	20	
Benzo(g,h,i)perylene	94.7	10	ug/l	100		95	40-125	1	25	
Benzo(a)pyrene	79.8	10	ug/l	100		80	55-120	4	25	
Benzyl alcohol	60.6	20	ug/l	100		61	45-120	4	20	
Bis(2-chloroethoxy)methane	83.2	10	ug/l	100		83	55-120	1	20	
Bis(2-chloroethyl)ether	81.7	10	ug/l	100		82	50-120	2	20	
Bis(2-chloroisopropyl)ether	81.1	10	ug/l	100		81	45-120	4	20	
Bis(2-ethylhexyl)phthalate	85.2	50	ug/l	100		85	60-130	2	20	
4-Bromophenyl phenyl ether	87.8	10	ug/l	100		88	50-120	3	25	
Butyl benzyl phthalate	83.2	20	ug/l	100		83	55-125	2	20	
4-Chloroaniline	77.3	10	ug/l	100		77	50-120	1	25	
2-Chloronaphthalene	81.4	10	ug/l	100		81	55-120	2	20	
4-Chloro-3-methylphenol	79.2	20	ug/l	100		79	60-120	6	25	
2-Chlorophenol	74.5	10	ug/l	100		74	45-120	4	25	
4-Chlorophenyl phenyl ether	87.0	10	ug/l	100		87	55-120	3	20	

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U.S. Filter/Westates Carbon
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Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G17017 Extracted: 07/17/05										
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
Chrysene	87.1	10	ug/l	100		87	60-120	0	20	
Dibenz(a,h)anthracene	97.1	20	ug/l	100		97	45-130	1	25	
Dibenzofuran	83.3	10	ug/l	100		83	60-120	2	20	
Di-n-butyl phthalate	77.2	20	ug/l	100		77	55-125	1	20	
1,3-Dichlorobenzene	72.2	10	ug/l	100		72	35-120	3	25	
1,4-Dichlorobenzene	70.2	10	ug/l	100		70	35-120	4	25	
1,2-Dichlorobenzene	72.6	10	ug/l	100		73	35-120	3	25	
3,3-Dichlorobenzidine	89.1	20	ug/l	100		89	45-130	1	25	
2,4-Dichlorophenol	76.5	10	ug/l	100		76	55-120	2	20	
Diethyl phthalate	83.2	10	ug/l	100		83	55-120	3	20	
2,4-Dimethylphenol	63.7	20	ug/l	100		64	30-120	0	25	
Dimethyl phthalate	84.4	10	ug/l	100		84	60-120	0	20	
4,6-Dinitro-2-methylphenol	82.9	20	ug/l	100		83	50-120	3	25	
2,4-Dinitrophenol	86.7	20	ug/l	100		87	40-120	3	25	
2,4-Dinitrotoluene	90.1	10	ug/l	100		90	60-120	4	20	
2,6-Dinitrotoluene	83.0	10	ug/l	100		83	60-120	2	20	
Di-n-octyl phthalate	87.5	20	ug/l	100		87	60-130	4	20	
Fluoranthene	79.8	10	ug/l	100		80	55-120	3	20	
Fluorene	85.8	10	ug/l	100		86	60-120	4	20	
Hexachlorobenzene	89.2	10	ug/l	100		89	50-120	4	20	
Hexachlorobutadiene	74.9	10	ug/l	100		75	40-120	2	25	
Hexachlorocyclopentadiene	88.4	20	ug/l	100		88	15-120	2	30	
Hexachloroethane	73.3	10	ug/l	100		73	35-120	4	25	
Indeno(1,2,3-cd)pyrene	90.1	20	ug/l	100		90	40-130	0	25	
Isophorone	83.7	10	ug/l	100		84	50-120	1	20	
2-Methylnaphthalene	78.7	10	ug/l	100		79	50-120	3	20	
2-Methylphenol	76.8	10	ug/l	100		77	45-120	3	20	
4-Methylphenol	79.3	10	ug/l	100		79	45-120	2	20	
Naphthalene	78.3	10	ug/l	100		78	50-120	1	20	
2-Nitroaniline	83.5	20	ug/l	100		84	60-120	1	20	
3-Nitroaniline	90.4	20	ug/l	100		90	55-120	4	25	
4-Nitroaniline	87.8	20	ug/l	100		88	50-125	6	20	
Nitrobenzene	79.1	20	ug/l	100		79	50-120	0	25	
2-Nitrophenol	79.7	10	ug/l	100		80	55-120	3	25	
4-Nitrophenol	74.7	20	ug/l	100		75	45-120	5	25	

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Kathleen A. Robb
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U.S. Filter/Westates Carbon
P.O. Box 3308
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Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

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METHOD BLANK/QC DATA

SEMI-VOLATILE ORGANICS BY GC/MS (EPA 3520C/8270C)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
<u>Batch: 5G17017 Extracted: 07/17/05</u>										
LCS Dup Analyzed: 07/20/2005 (5G17017-BSD1)										
N-Nitrosodiphenylamine	88.2	10	ug/l	100		88	55-120	2	20	
N-Nitroso-di-n-propylamine	86.8	10	ug/l	100		87	45-120	2	20	
Pentachlorophenol	94.4	20	ug/l	100		94	50-120	3	25	
Phenanthrene	79.7	10	ug/l	100		80	55-120	1	20	
Phenol	74.4	10	ug/l	100		74	45-120	4	25	
Pyrene	83.4	10	ug/l	100		83	50-120	5	25	
1,2,4-Trichlorobenzene	75.3	10	ug/l	100		75	45-120	0	20	
2,4,5-Trichlorophenol	88.5	20	ug/l	100		88	60-120	1	20	
2,4,6-Trichlorophenol	82.1	20	ug/l	100		82	60-120	2	20	
N-Nitrosodimethylamine	72.3	20	ug/l	100		72	40-120	16	20	
[illegible]2-Diphenylhydrazine/Azobenzene	82.7	20	ug/l	100		83	60-120	5	25	
Surrogate: 2-Fluorophenol	*133*		*ug/l*	*200*		*66*	*30-120*			
Surrogate: Phenol-d6	*147*		*ug/l*	*200*		*74*	*35-120*			
Surrogate: 2,4,6-Tribromophenol	*181*		*ug/l*	*200*		*90*	*45-120*			
Surrogate: Nitrobenzene-d5	*79.2*		*ug/l*	*100*		*79*	*45-120*			
Surrogate: 2-Fluorobiphenyl	*83.5*		*ug/l*	*100*		*84*	*45-120*			
Surrogate: Terphenyl-d14	*83.1*		*ug/l*	*100*		*83*	*45-120*			

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METHOD BLANK/QC DATA

ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
Blank Analyzed: 07/20/2005-07/22/2005 (5G20057-BLK1)										
Aldrin	ND	0.10	ug/l							
alpha-BHC	ND	0.10	ug/l							
beta-BHC	ND	0.10	ug/l							
delta-BHC	ND	0.20	ug/l							
gamma-BHC (Lindane)	ND	0.10	ug/l							
Chlordane	ND	1.0	ug/l							
4,4'-DDD	ND	0.10	ug/l							
4,4'-DDE	ND	0.10	ug/l							
4,4'-DDT	ND	0.10	ug/l							
Dieldrin	ND	0.10	ug/l							
Endosulfan I	ND	0.10	ug/l							
Endosulfan II	ND	0.10	ug/l							
Endosulfan sulfate	ND	0.20	ug/l							
Endrin	ND	0.10	ug/l							
Endrin aldehyde	ND	0.10	ug/l							
Endrin ketone	ND	0.10	ug/l							
Heptachlor	ND	0.10	ug/l							
Heptachlor epoxide	ND	0.10	ug/l							
Methoxychlor	ND	0.10	ug/l							
Toxaphene	ND	5.0	ug/l							
Surrogate: Tetrachloro-m-xylene	*0.352*		*ug/l*	*0.500*		*70*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.446*		*ug/l*	*0.500*		*89*	*45-120*			
LCS Analyzed: 07/20/2005 (5G20057-BS1)										**M-NR1**
Aldrin	0.356	0.10	ug/l	0.500		71	40-115			
alpha-BHC	0.435	0.10	ug/l	0.500		87	45-115			
beta-BHC	0.397	0.10	ug/l	0.500		79	50-115			
delta-BHC	0.447	0.20	ug/l	0.500		89	55-120			
gamma-BHC (Lindane)	0.431	0.10	ug/l	0.500		86	45-115			
4,4'-DDD	0.462	0.10	ug/l	0.500		92	60-120			
4,4'-DDE	0.446	0.10	ug/l	0.500		89	55-120			
4,4'-DDT	0.443	0.10	ug/l	0.500		89	60-120			
Dieldrin	0.437	0.10	ug/l	0.500		87	55-120			
Endosulfan I	0.417	0.10	ug/l	0.500		83	50-115			
Endosulfan II	0.433	0.10	ug/l	0.500		87	60-125			
Endosulfan sulfate	0.471	0.20	ug/l	0.500		94	60-120			

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ORGANOCHLORINE PESTICIDES (EPA 3510C/8081A)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
LCS Analyzed: 07/20/2005 (5G20057-BS1)										**M-NR1**
Endrin	0.441	0.10	ug/l	0.500		88	55-125			
Endrin aldehyde	0.443	0.10	ug/l	0.500		89	55-115			
Endrin ketone	0.441	0.10	ug/l	0.500		88	60-115			
Heptachlor	0.370	0.10	ug/l	0.500		74	45-115			
Heptachlor epoxide	0.416	0.10	ug/l	0.500		83	50-115			
Methoxychlor	0.454	0.10	ug/l	0.500		91	60-120			
Surrogate: Tetrachloro-m-xylene	*0.338*		*ug/l*	*0.500*		*68*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.439*		*ug/l*	*0.500*		*88*	*45-120*			
LCS Dup Analyzed: 07/20/2005 (5G20057-BSD1)										
Aldrin	0.341	0.10	ug/l	0.500		68	40-115	4	30	
alpha-BHC	0.422	0.10	ug/l	0.500		84	45-115	3	30	
beta-BHC	0.386	0.10	ug/l	0.500		77	50-115	3	30	
delta-BHC	0.433	0.20	ug/l	0.500		87	55-120	3	30	
gamma-BHC (Lindane)	0.419	0.10	ug/l	0.500		84	45-115	3	30	
4,4'-DDD	0.439	0.10	ug/l	0.500		88	60-120	5	30	
4,4'-DDE	0.425	0.10	ug/l	0.500		85	55-120	5	30	
4,4'-DDT	0.420	0.10	ug/l	0.500		84	60-120	5	30	
Dieldrin	0.417	0.10	ug/l	0.500		83	55-120	5	30	
Endosulfan I	0.398	0.10	ug/l	0.500		80	50-115	5	30	
Endosulfan II	0.411	0.10	ug/l	0.500		82	60-125	5	30	
Endosulfan sulfate	0.445	0.20	ug/l	0.500		89	60-120	6	30	
Endrin	0.421	0.10	ug/l	0.500		84	55-125	5	30	
Endrin aldehyde	0.379	0.10	ug/l	0.500		76	55-115	16	30	
Endrin ketone	0.415	0.10	ug/l	0.500		83	60-115	6	30	
Heptachlor	0.356	0.10	ug/l	0.500		71	45-115	4	30	
Heptachlor epoxide	0.400	0.10	ug/l	0.500		80	50-115	4	30	
Methoxychlor	0.430	0.10	ug/l	0.500		86	60-120	5	30	
Surrogate: Tetrachloro-m-xylene	*0.337*		*ug/l*	*0.500*		*67*	*35-115*			
Surrogate: Decachlorobiphenyl	*0.410*		*ug/l*	*0.500*		*82*	*45-120*			

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P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

POLYCHLORINATED BIPHENYLS (EPA 3510C/8082)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20057 Extracted: 07/20/05										
Blank Analyzed: 07/20/2005-07/22/2005 (5G20057-BLK1)										
Aroclor 1016	ND	1.0	ug/l							
Aroclor 1221	ND	1.0	ug/l							
Aroclor 1232	ND	1.0	ug/l							
Aroclor 1242	ND	1.0	ug/l							
Aroclor 1248	ND	1.0	ug/l							
Aroclor 1254	ND	1.0	ug/l							
Aroclor 1260	ND	1.0	ug/l							
Surrogate: Decachlorobiphenyl	*0.513*		*ug/l*	*0.500*		*103*	*45-120*			
LCS Analyzed: 07/22/2005 (5G20057-BS2)										M-NR1
Aroclor 1016	3.51	1.0	ug/l	4.00		88	50-115			
Aroclor 1260	3.67	1.0	ug/l	4.00		92	55-115			
Surrogate: Decachlorobiphenyl	*0.521*		*ug/l*	*0.500*		*104*	*45-120*			
LCS Dup Analyzed: 07/22/2005 (5G20057-BSD2)										
Aroclor 1016	3.23	1.0	ug/l	4.00		81	50-115	8	30	
Aroclor 1260	3.37	1.0	ug/l	4.00		84	55-115	9	25	
Surrogate: Decachlorobiphenyl	*0.479*		*ug/l*	*0.500*		*96*	*45-120*			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G18097 Extracted: 07/18/05										
Blank Analyzed: 07/19/2005 (5G18097-BLK1)										
Antimony	ND	0.010	mg/l							
Arsenic	ND	0.0050	mg/l							
Barium	ND	0.010	mg/l							
Chromium	ND	0.0050	mg/l							
Cobalt	ND	0.010	mg/l							
Copper	ND	0.010	mg/l							
Molybdenum	ND	0.020	mg/l							
Silver	ND	0.0070	mg/l							
Thallium	ND	0.010	mg/l							
Vanadium	ND	0.010	mg/l							
Zinc	ND	0.020	mg/l							
LCS Analyzed: 07/19/2005 (5G18097-BS1)										
Antimony	1.07	0.010	mg/l	1.00		107	80-120			
Arsenic	1.00	0.0050	mg/l	1.00		100	80-120			
Barium	0.954	0.010	mg/l	1.00		95	80-120			
Chromium	0.986	0.0050	mg/l	1.00		99	80-120			
Cobalt	1.02	0.010	mg/l	1.00		102	80-120			
Copper	1.01	0.010	mg/l	1.00		101	80-120			
Molybdenum	0.956	0.020	mg/l	1.00		96	80-120			
Silver	0.507	0.0070	mg/l	0.500		101	80-120			
Thallium	0.962	0.010	mg/l	1.00		96	80-120			
Vanadium	0.988	0.010	mg/l	1.00		99	80-120			
Zinc	0.959	0.020	mg/l	1.00		96	80-120			
Matrix Spike Analyzed: 07/19/2005 (5G18097-MS1)					**Source: IOG0791-01**					
Antimony	0.998	0.010	mg/l	1.00	ND	100	75-125			
Arsenic	0.946	0.0050	mg/l	1.00	0.0099	94	75-125			
Barium	0.888	0.010	mg/l	1.00	0.024	86	75-125			
Chromium	0.897	0.0050	mg/l	1.00	ND	90	75-125			
Cobalt	0.946	0.010	mg/l	1.00	ND	95	75-125			
Copper	1.02	0.010	mg/l	1.00	ND	102	75-125			
Molybdenum	1.09	0.020	mg/l	1.00	0.21	88	75-125			
Silver	0.476	0.0070	mg/l	0.500	ND	95	75-125			
Thallium	0.837	0.010	mg/l	1.00	ND	84	75-125			
Vanadium	0.925	0.010	mg/l	1.00	0.0044	92	75-125			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G18097 Extracted: 07/18/05										
Matrix Spike Analyzed: 07/19/2005 (5G18097-MS1)					**Source: IOG0791-01**					
Zinc	0.910	0.020	mg/l	1.00	ND	91	75-125			
Matrix Spike Dup Analyzed: 07/19/2005 (5G18097-MSD1)					**Source: IOG0791-01**					
Antimony	0.994	0.010	mg/l	1.00	ND	99	75-125	0	20	
Arsenic	0.945	0.0050	mg/l	1.00	0.0399	94	75-125	0	20	
Barium	0.879	0.010	mg/l	1.00	0.024	85	75-125	1	20	
Chromium	0.886	0.0050	mg/l	1.00	ND	89	75-125	1	20	
Cobalt	0.937	0.010	mg/l	1.00	ND	94	75-125	1	20	
Copper	1.01	0.010	mg/l	1.00	ND	101	75-125	1	20	
Molybdenum	1.08	0.020	mg/l	1.00	0.21	87	75-125	1	20	
Silver	0.471	0.0070	mg/l	0.500	ND	94	75-125	1	20	
Thallium	0.837	0.010	mg/l	1.00	ND	84	75-125	0	20	
Vanadium	0.916	0.010	mg/l	1.00	0.0044	91	75-125	1	20	
Zinc	0.900	0.020	mg/l	1.00	ND	90	75-125	1	20	
Batch: 5G19037 Extracted: 07/19/05										
Blank Analyzed: 07/19/2005 (5G19037-BLK1)										
Mercury	ND	0.00020	mg/l							
LCS Analyzed: 07/19/2005 (5G19037-BS1)										
Mercury	0.00823	0.00020	mg/l	0.00800		103	90-115			
Matrix Spike Analyzed: 07/19/2005 (5G19037-MS1)					**Source: IOG0937-01**					
Mercury	0.00796	0.00020	mg/l	0.00800	ND	100	75-120			
Matrix Spike Dup Analyzed: 07/19/2005 (5G19037-MSD1)					**Source: IOG0937-01**					
Mercury	0.00788	0.00020	mg/l	0.00800	ND	98	75-120	1	20	

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G19086 Extracted: 07/19/05										
Blank Analyzed: 07/20/2005 (5G19086-BLK1)										
Aluminum	ND	0.050	mg/l							
Boron	ND	0.050	mg/l							
Iron	ND	0.040	mg/l							
Magnesium	ND	0.020	mg/l							
Manganese	ND	0.020	mg/l							
Strontium	ND	0.020	mg/l							
Tin	ND	0.10	mg/l							
Titanium	ND	0.0050	mg/l							
LCS Analyzed: 07/20/2005 (5G19086-BS1)										
Aluminum	0.972	0.050	mg/l	1.00		97	80-120			
Boron	1.01	0.050	mg/l	1.00		101	80-120			
Iron	1.04	0.040	mg/l	1.00		104	80-120			
Magnesium	4.92	0.020	mg/l	5.00		98	80-120			
Manganese	1.02	0.020	mg/l	1.00		102	80-120			
Strontium	0.985	0.020	mg/l	1.00		98	80-120			
Tin	0.973	0.10	mg/l	1.00		97	80-120			
Titanium	1.03	0.0050	mg/l	1.00		103	80-120			
Matrix Spike Analyzed: 07/20/2005 (5G19086-MS1)					**Source: IOG0857-01**					
Aluminum	1.06	0.050	mg/l	1.00	0.082	98	75-125			
Boron	1.66	0.050	mg/l	1.00	0.64	102	75-125			
Iron	0.991	0.040	mg/l	1.00	0.034	96	75-125			
Magnesium	33.0	0.020	mg/l	5.00	29	80	75-125			
Manganese	0.938	0.020	mg/l	1.00	0.010	93	75-125			
Strontium	2.68	0.020	mg/l	1.00	1.7	98	75-125			
Tin	0.933	0.10	mg/l	1.00	0.0053	93	75-125			
Titanium	0.987	0.0050	mg/l	1.00	0.0034	98	75-125			

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METHOD BLANK/QC DATA

METALS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G19086 Extracted: 07/19/05										
Matrix Spike Dup Analyzed: 07/20/2005 (5G19086-MSD1)					**Source: IOG0857-01**					
Aluminum	1.11	0.050	mg/l	1.00	0.082	103	75-125	5	20	
Boron	1.74	0.050	mg/l	1.00	0.64	110	75-125	5	20	
Iron	1.02	0.040	mg/l	1.00	0.034	99	75-125	3	20	
Magnesium	34.4	0.020	mg/l	5.00	29	108	75-125	4	20	
Manganese	0.977	0.020	mg/l	1.00	0.010	97	75-125	4	20	
Strontium	2.76	0.020	mg/l	1.00	1.7	106	75-125	3	20	
Tin	0.950	0.10	mg/l	1.00	0.0053	94	75-125	2	20	
Titanium	1.02	0.0050	mg/l	1.00	0.0034	102	75-125	3	20	
Batch: 5G25067 Extracted: 07/25/05										
Blank Analyzed: 07/25/2005 (5G25067-BLK1)										
Zirconium	ND	0.20	mg/l							
LCS Analyzed: 07/25/2005 (5G25067-BS1)										
Zirconium	1.01	0.20	mg/l	1.00		101	80-120			
Matrix Spike Analyzed: 07/25/2005 (5G25067-MS1)					**Source: IOG1423-01**					
Zirconium	1.02	0.20	mg/l	1.00	ND	102	75-125			
Matrix Spike Dup Analyzed: 07/25/2005 (5G25067-MSD1)					**Source: IOG1423-01**					
Zirconium	1.03	0.20	mg/l	1.00	ND	103	75-125	1	20	

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14039 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14039-BLK1)										
Bromide	ND	0.50	mg/l							
Fluoride	ND	0.50	mg/l							
Nitrate-N	ND	0.15	mg/l							
Nitrite-N	ND	0.15	mg/l							
Sulfate	ND	0.50	mg/l							
LCS Analyzed: 07/14/2005 (5G14039-BS1)										
Bromide	4.88	0.50	mg/l	5.00		98	90-110			
Fluoride	4.68	0.50	mg/l	5.00		94	90-110			
Nitrate-N	1.08	0.15	mg/l	1.13		96	90-110			
Nitrite-N	1.47	0.15	mg/l	1.52		97	90-110			
Sulfate	9.53	0.50	mg/l	10.0		95	90-110			*M-3*
Matrix Spike Analyzed: 07/14/2005 (5G14039-MS1)					**Source: IOG0829-01**					
Bromide	4.97	0.50	mg/l	5.00	ND	99	80-120			
Fluoride	4.98	0.50	mg/l	5.00	0.18	96	80-120			
Nitrate-N	6.59	0.15	mg/l	1.13	5.2	123	80-120			*M-HA*
Nitrite-N	1.54	0.15	mg/l	1.52	ND	101	80-120			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14039-MSD1)					**Source: IOG0829-01**					
Bromide	4.71	0.50	mg/l	5.00	ND	94	80-120	5	20	
Fluoride	4.91	0.50	mg/l	5.00	0.18	95	80-120	1	20	
Nitrate-N	6.54	0.15	mg/l	1.13	5.2	119	80-120	1	20	
Nitrite-N	1.50	0.15	mg/l	1.52	ND	99	80-120	3	20	
Batch: 5G14075 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14075-BLK1)										
Phosphorus	ND	0.050	mg/l							

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85544
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14075 Extracted: 07/14/05										
LCS Analyzed: 07/14/2005 (5G14075-BS1)										
Phosphorus	0.915	0.050	mg/l	1.00		92	80-120			
Matrix Spike Analyzed: 07/14/2005 (5G14075-MS1)					**Source: IOG0784-01**					
Phosphorus	1.25	0.050	mg/l	1.00	0.37	88	65-130			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14075-MSD1)					**Source: IOG0784-01**					
Phosphorus	1.31	0.050	mg/l	1.00	0.37	94	65-130	5	15	
Batch: 5G14089 Extracted: 07/14/05										
Duplicate Analyzed: 07/14/2005 (5G14089-DUP1)					**Source: IOG0808-01**					
Color	10.0	1.0	Color Units		10			0	20	pH
Batch: 5G14094 Extracted: 07/14/05										
Duplicate Analyzed: 07/14/2005 (5G14094-DUP1)					**Source: IOG0812-01**					
Residual Chlorine	ND	0.10	mg/l		ND				20	
Batch: 5G14118 Extracted: 07/14/05										
Blank Analyzed: 07/14/2005 (5G14118-BLK1)										
Surfactants (MBAS)	ND	0.10	mg/l							
LCS Analyzed: 07/14/2005 (5G14118-BS1)										
Surfactants (MBAS)	0.255	0.10	mg/l	0.250		102	90-110			

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G14118 Extracted: 07/14/05										
Matrix Spike Analyzed: 07/14/2005 (5G14118-MS1)					**Source: IOG0833-01**					
Surfactants (MBAS)	0.271	0.10	mg/l	0.250	ND	108	50-125			
Matrix Spike Dup Analyzed: 07/14/2005 (5G14118-MSD1)					**Source: IOG0833-01**					
Surfactants (MBAS)	0.299	0.10	mg/l	0.250	ND	120	50-125	10	20	
Batch: 5G15045 Extracted: 07/15/05										
Blank Analyzed: 07/15/2005 (5G15045-BLK1)										
Sulfide	ND	0.10	mg/l							
LCS Analyzed: 07/15/2005 (5G15045-BS1)										
Sulfide	0.567	0.10	mg/l	0.560		101	80-120			
Matrix Spike Analyzed: 07/15/2005 (5G15045-MS1)					**Source: IOG0959-02**					
Sulfide	0.547	0.10	mg/l	0.560	0.010	96	70-130			
Matrix Spike Dup Analyzed: 07/15/2005 (5G15045-MSD1)					**Source: IOG0959-02**					
Sulfide	0.527	0.10	mg/l	0.560	0.010	92	70-130	4	30	
Batch: 5G15075 Extracted: 07/15/05										
Blank Analyzed: 07/18/2005 (5G15075-BLK1)										
Total Cyanide	ND	0.025	mg/l							
LCS Analyzed: 07/18/2005 (5G15075-BS1)										
Total Cyanide	0.191	0.025	mg/l	0.200		96	90-110			

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G15075 Extracted: 07/15/05										
Matrix Spike Analyzed: 07/18/2005 (5G15075-MS1)					**Source: IOG0684-02**					
Total Cyanide	0.214	0.025	mg/l	0.200	ND	107	70-115			
Matrix Spike Dup Analyzed: 07/18/2005 (5G15075-MSD1)					**Source: IOG0684-02**					
Total Cyanide	0.188	0.025	mg/l	0.200	ND	94	70-115	13	15	
Batch: 5G19066 Extracted: 07/19/05										
Blank Analyzed: 07/19/2005 (5G19066-BLK1)										
Total Kjeldahl Nitrogen	ND	0.50	mg/l							
LCS Analyzed: 07/19/2005 (5G19066-BS1)										
Total Kjeldahl Nitrogen	11.5	0.50	mg/l	10.0		115	85-120			
LCS Dup Analyzed: 07/19/2005 (5G19066-BSD1)										
Total Kjeldahl Nitrogen	11.2	0.50	mg/l	10.0		112	85-120	3	15	
Matrix Spike Analyzed: 07/19/2005 (5G19066-MS1)					**Source: IOG0863-02**					
Total Kjeldahl Nitrogen	11.8	0.50	mg/l	10.0	0.84	110	85-120			
Matrix Spike Dup Analyzed: 07/19/2005 (5G19066-MSD1)					**Source: IOG0863-02**					
Total Kjeldahl Nitrogen	12.3	0.50	mg/l	10.0	0.84	115	85-120	4	15	
Batch: 5G20078 Extracted: 07/20/05										
Blank Analyzed: 07/20/2005 (5G20078-BLK1)										
Oil & Grease	ND	5.0	mg/l							

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METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G20078 Extracted: 07/20/05										
LCS Analyzed: 07/20/2005 (5G20078-BS1)										**M-NR1**
Oil & Grease	16.0	5.0	mg/l	20.0		80	65-120			
LCS Dup Analyzed: 07/20/2005 (5G20078-BSD1)										
Oil & Grease	15.5	5.0	mg/l	20.0		78	65-120	3	20	
Batch: 5G22080 Extracted: 07/22/05										
Blank Analyzed: 07/22/2005 (5G22080-BLK1)										
Phenols	ND	0.10	mg/l							
LCS Analyzed: 07/22/2005 (5G22080-BS1)										
Phenols	0.508	0.10	mg/l	0.500		102	90-110			
Matrix Spike Analyzed: 07/22/2005 (5G22080-MS1)					**Source: IOG0903-08**					
Phenols	0.508	0.10	mg/l	0.500	ND	102	65-155			
Matrix Spike Dup Analyzed: 07/22/2005 (5G22080-MSD1)					**Source: IOG0903-08**					
Phenols	0.526	0.10	mg/l	0.500	ND	105	65-155	3	20	
Batch: 5G22113 Extracted: 07/22/05										
Blank Analyzed: 07/22/2005 (5G22113-BLK1)										
Ammonia-N	ND	0.50	mg/l							
LCS Analyzed: 07/22/2005 (5G22113-BS1)										
Ammonia-N	0.993	0.50	mg/l	1.00		99	85-115			

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

INORGANICS

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: 5G22113 Extracted: 07/22/05										
Matrix Spike Analyzed: 07/22/2005 (5G22113-MS1)					**Source: IOG0857-01**					
Ammonia-N	1.74	0.50	mg/l	2.00	ND	87	75-125			
Matrix Spike Dup Analyzed: 07/22/2005 (5G22113-MSD1)					**Source: IOG0857-01**					
Ammonia-N	1.83	0.50	mg/l	2.00	ND	92	75-125	5	15	

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Attention: Deborah Foster

Project ID: TTO

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Sampled: 07/13/05
Received: 07/14/05

METHOD BLANK/QC DATA

DIQUAT/PARAQUAT (EPA 549.2)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Data Qualifiers
Batch: C5G1809 Extracted: 07/18/05										
Blank Analyzed: 07/18/2005 (C5G1809-BLK1)										
Diquat	ND	4.0	ug/l							
Paraquat	ND	20	ug/l							
LCS Analyzed: 07/18/2065 (C5G1809-BS1)										
Diquat	32.5	4.0	ug/l	40.0		81	70-120			
Paraquat	32.7	20	ug/l	40.0		82	65-120			
LCS Dup Analyzed: 07/18/2005 (C5G1809-BSD1)										
Diquat	32.7	4.0	ug/l	40.0		82	70-120	1	20	
Paraquat	33.1	20	ug/l	40.0		83	65-120	1	20	
Matrix Spike Analyzed: 07/18/2005 (C5G1809-MS1)					**Source: COG0352-01**					
Diquat	34.8	4.0	ug/l	40.0	ND	87	70-120			
Paraquat	35.5	20	ug/l	40.0	ND	89	65-120			

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U.S. Filter/Westates Carbon
P.O. Box 3308
Parker, AZ 85344
Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

DATA QUALIFIERS AND DEFINITIONS

C	Calibration Verification recovery was above the method control limit for this analyte. Analyte not detected, data not impacted.
L	Laboratory Control Sample recovery was above the method control limits. Analyte not detected, data not impacted.
M-3	Results exceeded the linear range in the MS/MSD and therefore are not available for reporting. The batch was accepted based on acceptable recovery in the Blank Spike (LCS).
M-HA	Due to high levels of analyte in the sample, the MS/MSD calculation does not provide useful spike recovery information. See Blank Spike (LCS).
M-NR1	There was no MS/MSD analyzed with this batch due to insufficient sample volume. See Blank Spike/Blank Spike Duplicate.
pH	pH = 7
R-2	The RPD exceeded the method control limit
RL-3	Reporting limit raised due to high concentrations of non-target analytes.
ND	Analyte NOT DETECTED at or above the reporting limit or MDL, if MDL is specified.
RPD	Relative Percent Difference

ADDITIONAL COMMENTS

For 1,2-Diphenylhydrazine:

The result for 1,2-Diphenylhydrazine is based upon the reading of its breakdown product, Azobenzene.

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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U.S. Filter/Westates Carbon
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Attention: Deborah Foster

Project ID: TTO

Report Number: IOG0857

Sampled: 07/13/05
Received: 07/14/05

Certification Summary

Del Mar Analytical, Irvine

Method	Matrix	Nelac	California
Calculation	Water	X	X
EPA 300.0	Water	X	X
EPA 330.5	Water	X	X
EPA 350.3	Water	X	X
EPA 3510/8082	Water	X	X
EPA 3510C/8081A	Water	X	X
EPA 365.3	Water	X	X
EPA 376.2	Water	X	X
EPA 413.1	Water	X	X
EPA 420.1	Water	X	X
EPA 6010B	Water	X	X
EPA 7470A	Water	X	X
EPA 8260B	Water	X	X
EPA 8270C	Water	X	X
SM2120B	Water	N/A	N/A
SM4500-CN-C,E	Water	X	X
SM4500-NORG C	Water		X
SM5540-C	Water	X	X

Nevada and NELAP provide analyte specific accreditations. Analyte specific information for Del Mar Analytical may be obtained by contacting the laboratory or visiting our website at www.dmalabs.com.

Subcontracted Laboratories

Del Mar Analytical - Colton *California Cert #1169, Arizona Cert #AZ0062, Nevada Cert #CA-242*
1014 E. Cooley Drive, Suite AB - Colton, CA 92324
Method Performed: EPA 549.2
Samples: IOG0857-01

Test America, Inc.
2960 Foster Creighton Drive - Nashville, TN 37204
Analysis Performed: 8151A (Herbicides)
Samples: IOG0857-01

Del Mar Analytical, Irvine
Kathleen A. Robb
Project Manager

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Del Mar Analytical

17461 Derian Av. 100, Irvine, CA 92614 Ph (949) 261-1022 Fax (949) 261-1228
1014 E. Cooley Dr., Suite A, Colton, CA 92324 Ph (909) 370-4667 Fax (909) 370-1046
9484 Chesapeake Drive, Suite 805, San Diego, CA 92123 Ph (619) 505-9596 Fax (619) 505-9689
9830 South 51st Street, Suite B-120, Phoenix, AZ 85044 Ph (480) 785-0043 Fax (480) 785-0851
2520 E. Sunset Rd., Suite #3, Las Vegas, NV 89120 Ph (702) 798-3620 Fax (702) 798-3621

SUBCONTRACT ORDER - PROJECT # IOG0857

SENDING LABORATORY:	RECEIVING LABORATORY:
Del Mar Analytical, Irvine	Del Mar Analytical - Colton
17461 Derian Avenue. Suite 100	1014 E. Cooley Drive, Suite AB
Irvine, CA 92614	Colton, CA 92324
Phone: (949) 261-1022	Phone :(909) 370-4667
Fax: (949) 261-1228	Fax: (909) 370-1046
Project Manager: Kathleen A. Robb	COG0448

Analysis	Expiration	Due	Comments
Sample ID: IOG0857-01 Water **Sampled: 07/13/05 14:00**			
549.1-Diquat	07/20/05 14:00	07/25/05 12:00	std TAT- sub to DMAC-see comments

Containers Supplied:

1 L Brown Poly (IOG0857-01V)

SAMPLE INTEGRITY:

All containers intact: ☑ Yes ☐ No
Custody Seals Present: ☐ Yes ☐ No
Sample labels/COC agree: ☑ Yes ☐ No
Samples Preserved Properly: ☑ Yes ☐ No
Samples Received On Ice:: ☑ Yes ☐ No
Samples Received at (temp): 6°

Released By	Date	Time	Received By	Date	Time
VaBanks			A. Greco	7-14-05	~~1~~
Anthony Greco	7-14-05	1500	Ashley Banks	7/14/05	1500

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 2[illegible]22 FAX (949) 260-3297
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-4667 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address:

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation										Special Instructions

Relinquished By Date/Time: Received By Date/Time:

Relinquished By Date/Time: Received By Date/Time:

Relinquished By Date/Time: Received By Date/Time:

Turnaround Time: (check)
Same Day ______ 72 Hours ________
24 Hours ______ 5 days ________
48 hours ______ normal ________
Sample Integrity: (Check)
Intact ________ On Ice: ________

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 2[illegible] FAX (949) 260-3[illegible]
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 370-[illegible]67 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
9830 South 51st St., Suite B-120, Phoenix AZ 85044 (480) 785-0043 FAX (480) 785-0851
2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798-3620 FAX (702) 798-3621

CHAIN OF CUSTODY FORM

Client Name/Address:

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation										Special Instructions

Relinquished By	Date/Time:	Received By	Date/Time:
Relinquished By	Date/Time:	Received By	Date/Time:
Relinquished By	Date/Time:	Received By	Date/Time:

Turnaround Time: (check)

Same Day ______ 72 Hours ________

24 Hours ______ 5 days ________

48 hours ______ normal ________

Sample Integrity: (Check)

Intact ________ On Ice: ________

Del Mar Analytical

17461 Derian, Irvine, CA 92614 (949) 2 2 FAX (949) 260 3299
1014 E. Cooley Dr., Suite A, Colton, CA 92324 (909) 37 67 FAX (909) 370-1046
9484 Chesapeake Dr., Suite 805, San Diego, CA 92123 (858) 505-8596 FAX (858) 505-9689
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2520 E. Sunset Rd. #3, Las Vegas, NV 89120 (702) 798 3620 FAX (702) 798 3621

CHAIN OF CUSTODY FORM

Client Name/Address:

P.O. #:

Project:

Project Manager/Phone Number:

Phone Number:

Sampler:

Fax Number:

ANALYSIS REQUIRED

Sample Description	Sample Matrix	Container Type	# of Containers	Sampling Date/Time	Preservation										Special Instructions

Relinquished By Date/Time: Received By Date/Time:

Relinquished By Date/Time: Received By Date/Time:

Relinquished By Date/Time: Received By Date/Time:

Turnaround Time: (check)
Same Day ______ 72 Hours ______
24 Hours ______ 5 days ______
48 hours ______ normal ______

Sample Integrity: (Check)
Intact ______ On Ice: ______

ATTACHMENT G

EXCERPT FROM 2003 WORKING DRAFT RISK ASSESSMENT WORKPLAN FOR THE SIEMENS WATER TECHNOLOGIES CORP. CARBON REACTIVATION FACILITY:

APPENDIX A

PROTOCOL FOR PROVIDING INFORMATION FROM THE COLORADO RIVER INDIAN TRIBES TO WESTATES

(PREPARED BY THE COLORADO RIVER INDIAN TRIBES)

ATTACHMENT G

EXCERPT FROM 2003 WORKING DRAFT RISK ASSESSMENT WORKPLAN
FOR THE SIEMENS WATER TECHNOLOGIES CORP.
CARBON REACTIVATION FACILITY

APPENDIX A
PROTOCOL FOR PROVIDING INFORMATION FROM THE COLORADO RIVER INDIAN TRIBES TO WESTATES
(Prepared by the Colorado River Indian Tribes)

Westates and/or its Consultants need to provide a written request for risk assessment information to the Colorado River Indian Tribes (CRIT) Attorney Generals (AG) office or its designee.

The CRIT AG office will process the request and determine the disposition of the information requested. The disposition may include one of the following:

a) Non-sensitive standard EPA guidance information

b) Non-sensitive site-specific information

c) Sensitive site-specific information

Information requests that qualify under conditions (a) non-sensitive standard and/or (b) non-sensitive site specific, will be processed as follows:

(1) If the response to Westates request is to be in writing, the CRIT AG office or its designee will determine the appropriate CRIT department or person to respond to the information request. The written response will be provided to the CRIT AG office for review and will be submitted by CRIT AG office to Westates.

(2) If response is to be verbal (i.e., telephone conversation, meeting, etc.), the CRIT AG office will determine the appropriate CRIT department or person for disseminating information. A representative of the CRIT AG office or their designee must be present for all communications. No direct contact can be made without a representative of the AG office present. The CRIT AG office or their designee will provide a written summary of phone call or meeting to Westates.

(3) If the requested information qualifies under condition (c) sensitive site-specific, the AG office will process the information according to the protocol listed under separate cover, entitled, "Process for Evaluating Human and Ecological Health Risks Specific to the Colorado Indian River Tribes". This is a confidential process designed to achieve the following two objectives:

    (a) To ensure protection of human health and ecological risks specific to cultural, medicinal, and/or spiritual practices of the Colorado River Indian Tribes that may be affected by the Westates facility operations, and

    (b) To ensure the confidentiality of this sensitive information within the tribes.

The CRIT AG office or its designee will prepare an appropriate and relevant written response to Westates for inclusion into all risk assessment documents. This response is intended to satisfy any federal or state risk assessment requirements for the Westates facility operations.

Finally, the intent of this protocol is to ensure that Westates' information needs are met in an appropriate and timely manner and that the CRIT AG office is completely aware of any information the tribe may provide to Westates and/or its consultants. The CRIT AG office will be responsible for obtaining Tribal Council permission for all information requests.

ATTACHMENT G

EXCERPT FROM 2003 WORKING DRAFT RISK ASSESSMENT WORKPLAN
FOR THE SIEMENS WATER TECHNOLOGIES CORP.
CARBON REACTIVATION FACILITY

PROCESS FOR EVALUATING HUMAN AND ECOLOGICAL HEALTH RISKS SPECIFIC TO THE COLORADO RIVER INDIAN TRIBES

(Prepared by the Colorado River Indian Tribes)

The US EPA guidance to be used by Westates in conducting risk assessment for the facility is a prescriptive document with a standard set of exposure scenarios to be evaluated for potential human health and ecological risk. It is important that exposures to the tribes specific to cultural, medicinal, and/or spiritual activities or special dietary needs be evaluated in the risk assessment. It is equally important that these sacred practices remain confidential.

In order to adequately assess potential public health and ecological risk to the tribes and maintain strictest confidentiality, the following process will be used.

Human Health

1. ARCADIS risk assessor will design a series of questions to determine potential exposures for CRIT members that may not be accounted for in traditional USEPA risk assessment.
2. Information for this assessment of human health risks to be collected via a confidential questionnaire.
3. A follow up telephone conversation to clarify information and/or to seek additional information will be conducted after receipt of the questionnaires and preliminary review. This follow up will include the ARCADIS risk assessor, and a knowledgeable tribe member or designee. The follow up conversation will be conducted, as appropriate, for each tribe.
4. Human health information to be gathered from each of the tribes, to include, but not limited to the following:
    - plants, soil, animals used in cultural, medicinal, spiritual practices or special dietary needs
    - type of potential exposure during these practices, ie, ingestion, inhalation, and/or dermal contact with plants, soil, animals
    - how often/how long is the exposure (ie, 2 hours a day, every day, or once a year, etc.)
    - how much plant, soil, animal matter is used in the practice (one plant, two plants, only the roots, only leaves, only the animal hide, handful of soil, etc.)
    - type plants and/or animals used in practices
    - multiple exposures, i.e., is an individual likely to be exposed to one or more of these practices.
5. Information to be collated and compared to risk exposure calculations already prescribed in USEPA guidance and/or developed by Westates to determine the following:
    - Is the tribe specific exposure accounted for in the existing EPA guidance?

- If not, and the exposure is significant, can existing EPA guidance be modified?
- If not, exposure equations based on the information from the tribes will be created to assess exposure.

6. All information collected will be held in strictest confidence and returned to the tribe after all final risk assessment evaluations have been made.
7. It will not be necessary for assessment procedures for exact rituals or medicinal recipes be disclosed even to ARCADIS risk assessors.
8. Exposure to receptors due to subsistence fishing, hunting, and agriculture developed by Westates consultants will be reviewed by ARCADIS risk assessor to make sure full exposure is accounted for in the risk assessment.
9. ARCADIS will prepare text for inclusion in the risk assessment. This text is will summarize potential risks relative to tribal-specific cultural, medicinal, and/or spiritual activities or special dietary needs evaluated in the risk assessment. This text will be general and reviewed by Tribal council prior to release to Westates.

Ecological Health

1. ARCADIS risk assessor to work with tribal environmental officials to identify state and federal threatened and endangered species and species of special concern. The precise locations of prime habitat, nesting areas, etc. do not need to be provided even to ARCADIS. However, all potential critical habitat and threatened and endangered species and species of special concern, need to be identified.
2. ARCADIS will help the tribe prepare confidential survey information to be used in the ecological risk assessment. This may include, but not limited to the following:
    - Review the list of state and federal Threatened and Endangered Species/Species of Special Concern to determine if said species exist on tribal lands
    - Determine nature and extent of critical habitat and/or threatened and endangered species/species of special concern
    - Identify any flora/fauna species of specific tribal concern relative to cultural, medicinal, spiritual practices for each tribe.
    - Determine if existing ecological risk assessment will address all of these special ecological receptors
    - Identify methods for addressing these receptors, e.g. surrogate species, etc. to be included in the ecological risk assessment.
3. ARCADIS will prepare text for inclusion in the risk assessment. This text is will summarize potential risks to threatened and endangered species, species of special concern, and any tribal-specific species relative to cultural, medicinal, and/or spiritual activities. This text will be general and reviewed by Tribal council prior to release to Westates.

ATTACHMENT G
EXCERPT FROM 2003 WORKING DRAFT RISK ASSESSMENT WORKPLAN
FOR THE SIEMENS WATER TECHNOLOGIES CORP.
CARBON REACTIVATION FACILITY

Process Flow Chart
(Prepared by the Colorado River Indian Tribes)