FINAL REPORT

Comparative Demonstration of Active and Semi-Passive In Situ Bioremediation Approaches for Perchlorate Impacted Groundwater: Active In Situ Bioremediation Demonstration (Aerojet Facility)

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LIST OF ACRONYMS

AEL	Aerojet's Environmental Laboratory
AP	ammonium perchlorate
ASTM	American Standard for Testing and Materials
BAZ	biologically active zone
bgs	below ground surface
BOD	biological oxygen demand
btoc	below top of casing
CDG	chlorine dioxide generator
CDHS	California Department of Health Services
CDWR	California Department of Water Resources
cis-1,2-DCE	cis-1,2-Dichloroethene
cm/sec	centimeters per second
COD	chemical oxygen demand
^{o}C	degrees Celsius
ClO_4^-	Perchlorate
DCE	Dichloroethene
Dem/Val	demonstrate/validate
DGGE	denaturing gradient gel electrophoresis
Dhc	*Dehalococcoides*
DHGs	Dissolved hydrocarbon gases
DNA	deoxyribonucleic acid
DO	dissolved oxygen
DOD	Department of Defense
DOE	Department of Energy
DOT	Department of Transportation
EISB	enhanced *in situ* bioremediation
EPA	U.S. Environmental Protection Agency
ESTCP	Environmental Security Technology Certification Program
EVO	emulsified vegetable oil
EW	Extraction Well
ft	ft
ft/day	feet per day
ft/ft	feet per feet
ft/yr	feet per year
ft^2	square feet
ft^2/day	square feet per day
GAO	Government Accountability Office
gpm	gallons per minute
HASP	Health and Safety Plan

LIST OF ACRONYMS (CONTINUED)

HASP	Health and Safety Plan
IC	ion chromatography
ID	inside diameter
IRCTS	Inactive Rancho Cordova Test Site
K	hydraulic conductivity
L	liter
LHAAP	Longhorn Army Ammunition Plant
NFESC	Naval Facilities Engineering Service Center
m	meters
m^2	square meters
m/yr	meters per year
MCL	maximum contaminant levels
MEAL	methanol, ethanol, acetate and lactate
mg/L	milligrams per Liter
MNA	Monitored Natural Attenuation
MSDS	safety data sheet
mV	millivolts
NASA	National Aeronautics and Space Administration
NIROP	Naval Industrial Reserve Ordnance Plant
NPV	net present value
O&M	Operation and Maintenance
OM&M	Operation, Maintenance and Monitoring
ORP	oxidation reduction potential
OSHA	Occupational Safety and Health Administration
OSWER	Office of Solid Waste and Emergency Response
PAL	provisional action level
PCR	polymerase chain reaction
PLC	programmable logic controller
ppb	parts per billion
PQL	practical quantitation limit
PRG	preliminary remediation goal
P&T	Pump and Treat
RCRA	Resource Conservation and Recovery Act
RW	Recharge Well
QAPP	Quality Assurance Project Plan
SAP	Sampling and Analysis Plan
SERDP	Strategic Environmental Research and Development Program
SIU	Southern Illinois University

SAP Sampling and Analysis Plan

LIST OF ACRONYMS (CONTINUED)

SAP	Sampling and Analysis Plan
SERDP	Strategic Environmental Research and Development Program
SIU	Southern Illinois University
TCE	Trichloroethene
TDS	total dissolved solids
TWA	time weighted average
UCB	University of California at Berkeley
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VFA	volatile fatty acids
VOCs	Volatile organic compounds
WNN	Western Non-Aerospace Non-Industrial
µg/L	micrograms per Liter
µmol/L	micromoles per Liter

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Executive Summary

Perchlorate is an inorganic anion that consists of chlorine bonded to four oxygen atoms. It is a primary ingredient in solid rocket propellant and has been used for decades by Department of Defense (DOD), National Aeronautics and Space Administration (NASA), and the defense industry in the manufacturing, testing, and firing of rockets and missiles. Perchlorate exhibits high solubility and mobility in water and has been identified in groundwater at numerous sites across the U.S. at concentrations above the upper limit of U.S. Environmental Protection Agency's (EPA's) provisional cleanup guidance for perchlorate of 18 parts per billion (ppb). Enhanced *in situ* bioremediation (EISB) of perchlorate impacted groundwater offers the potential to treat and destroy perchlorate without the need for disposal of residuals containing recovered perchlorate (as with above ground ion exchange) or extensive above ground treatment (as with *ex situ* bioremediation).

This Report describes work conducted to demonstrate/validate the use of an active EISB approach at the Western Non-Aerospace Non-Industrial (WNN) Easement of the Inactive Rancho Cordova Test Site (IRCTS) in Rancho Cordova, California. The goal of this work was to demonstrate the efficacy of this approach at a scale that is large enough to generate accurate full-scale design and cost information for widespread technology consideration and application at DOD and related sites.

The active EISB approach involves on-going groundwater recirculation and delivery of electron donor to create a biologically active zone or biobarrier across a perchlorate plume, for the purposes of promoting perchlorate biodegradation and controlling plume migration. The active EISB test consisted of an active biobarrier, whereby groundwater containing perchlorate and trichloroethene (TCE) was extracted from the shallow aquifer, amended with carbon-based electron donor (ethanol), and recharged to the shallow aquifer to promote *in situ* biodegradation of the perchlorate and TCE to environmentally-acceptable end products. The active biobarrier provided containment and treatment of a 600-foot wide section of the perchlorate and TCE plume in the shallow aquifer along the WNN Easement using two groundwater extraction wells and a single groundwater recharge (electron donor delivery) well. The results of the test demonstrated that indigenous bacteria are capable of biodegrading perchlorate using ethanol as an electron donor. Perchlorate concentrations as high as 4,300 µg/L were reduced to less than the practical quantitation limit (PQL) of 4 µg/L within 50 feet of the electron donor delivery / recharge well. The perchlorate biodegradation half-life was estimated to be approximately 1 day, consistent with perchlorate biodegradation half-lives reported for other sites (Cox et al., 2001). TCE dechlorination was also observed at the downgradient monitor well following bioaugmentation of the shallow aquifer with dehalorespiring (TCE-degrading) bacteria at the recharge well.

With respect to operations, the test demonstrated that the active biobarrier approach is capable of providing effective containment and treatment of impacted groundwater. System operation time

was very high (greater than 98%), with system shutdowns primarily related to the two bioaugmentation events (therefore intentional). Injecting electron donor over a one hour period of time every 24 hours followed by injection of chlorine dioxide was effective in controlling biofouling in the electron donor delivery / recharge well over a sustained period (more than 6 months).

Based on the experience and observations made during the demonstration, all of the performance objectives for the demonstration were achieved. The performance objectives were demonstrated as follows:

- **The ease of installation of electron donor delivery components** - This objective was achieved based on experience with the actual installation of the groundwater recirculation and electron donor delivery systems at the IRCTS. The equipment required for the active groundwater recirculation and injection of electron donor was all readily available through local drillers and plumbing suppliers. The ClO_2 biofouling control system was also available and straightforward to install. The procedures used to install the equipment were standard and well established procedures for local drillers and the procedures were simple enough to be conducted by field technicians with training in basic plumbing techniques.

- **The ease of electron donor delivery events** - This objective was achieved based on experience of field staff with the actual electron donor delivery events. The activities and procedures required for the electron donor delivery events were simple enough to be conducted by field staff with minimal specialized training and effort. It is believed that the pulsed injection of electron donor over one hour each day followed by an injection of ClO_2 was an effective operating strategy for controlling biofouling of the injection well

- **The enhancement of microbiological activity** - This objective was achieved based on the results of chemical and geochemical characterization. Groundwater monitoring data for chemical and geochemical parameters demonstrated that electron donor addition enhanced microbiological activity in the treatment zone. Significant and sustained reductions in ORP were observed following addition of electron donor and provide the first indication that biological activity was enhanced by the addition of electron donor. Additional evidence of enhanced microbial activity was demonstrated by the reductions in perchlorate concentrations. Groundwater sampling of performance monitoring wells demonstrated that the average perchlorate concentrations were reduced to below the PQL of 4.0 µg/L during the operating period. The average perchlorate concentrations measured in: (1) MW-1 from Day 29 to the end of amendment injection period (2.6 µg/L); and (2) STSW-138A from Day 85 to the end of amendment injection period (2.9 µg/L) were all less than 4.0 µg/L.

- **The ease of performance monitoring and validation** - This objective was achieved based on the data obtained during the demonstration. The quality of the data obtained and the ability to interpret this data and quantify biodegradation with confidence demonstrates that the performance monitoring network allowed for straightforward data collection, interpretation and validation.

- **The reduction in perchlorate concentrations** - This objective was achieved based on groundwater sampling of performance monitoring wells that demonstrated that the average perchlorate concentrations were reduced to below the practical quantitation limit (PQL) of 4.0 µg/L during the during the operating period.

- **The radius of influence and distance for degradation** - This objective was achieved based on groundwater sampling results from performance monitoring wells during the tracer tests and following electron donor delivery which demonstrated that the radius of influence of the system extends between the recirculation wells and that perchlorate was degraded before groundwater reached downgradient performance monitoring wells.

An assessment of the costs to implement EISB for perchlorate impacted groundwater using the active approach was also conducted. A cost model was developed for a template site based on a typical site with perchlorate impacted shallow groundwater. Using these site conditions, the cost model identifies the major cost drivers for the active approach and provides an estimate of costs for the capital, O&M, and long-term monitoring. A cost estimate was also prepared for other approaches to EISB (passive, semi-passive and a trench biowall) and a conventional pump and treat system to provide points of comparison with the active EISB approach. The cost model focused on treatment of a contaminated plume of groundwater and did not include costs for possible source zone treatment. The cost assessment includes estimates of the Net Present Value (NPV) of future costs to help assess the life-cycle costs.

The template site base case design incorporates one biobarrier on the downgradient edge of a plume to treat water as it flows across the line of the biobarrier. Based on the groundwater seepage velocity of 10 meters per year (m/yr) or 33 feet per year (ft/yr), a plume that extends for 240 meters (800 feet) along the direction of groundwater flow and the assumed need to flush two pore volumes of clean water through the impacted aquifer to achieve clean-up standards, it would be expected to take approximately 48 years for the plume to be treated in the base case.

The perchlorate treatment objective that was used for the template site was based on the chronic exposure reference dose (and the resulting drinking water equivalent concentration) selected by the U.S. Environmental Protection Agency in 2005 (http://www.epa.gov/iris/subst/1007.htm) of 24.5 µg/L or 0.0245 milligrams per liter (mg/L). A lower treatment objective would increase the costs associated with the remediation. The active EISB approach can achieve low treatment criteria (i.e., below 4.0 µg/L or 0.004 mg/L) but to achieve lower target treatment criteria, a higher safety factor would be required in the design and operation of each of the remedy such

that pockets or layers of low hydraulic conductivity geological material containing untreated groundwater with some perchlorate do not remain or transmit perchlorate in groundwater following treatment and the system may need to be operated for a longer period of time.

The costs to implement active EISB for perchlorate impacted groundwater will vary significantly from site to site. The key costs drivers are listed below.

- The dimensions and depth of the plume to be treated.
- Ambient groundwater velocity.
- Hydraulic conductivity (K) of the geological media containing the impacted groundwater and the degree of variation in the K of different layers in the geological media.
- Concentration of perchlorate and other electron acceptors in impacted groundwater and the target treatment concentration.

The capital and operation and maintenance (O&M) cost for the active EISB system and for a comparable pump and treat system at the template site are presented in the table below.

	Active Biobarrier	Pump and Treat
Capital Costs	$430,000	$490,000
Annual O&M Costs	$60,000	$74,000
NPV of 30 Years of O&M Costs	$1,200,000	$1,470,000
NPV of 30 Years of Total Remedy Costs	$1,980,000	$2,310,000
Total 30-Year Remedy Costs	$2,700,000	$3,160,000

The active remedial approach could be used in a modified configuration to treat source areas below the water table. This active source area treatment approach could be coupled with monitored natural attenuation (MNA) of the downgradient plume and could have the benefit of a significantly reduced time frame for operation than that of a system that simply treats a downgradient plume of perchlorate. Applying an active approach in the source area would have a higher initial capital cost and annual O&M costs but overall savings may be achieved because of a shorter duration of operation.

1. INTRODUCTION

This Final Report has been prepared by Geosyntec Consultants (Geosyntec) for the Environmental Security Technology Certification Program (ESTCP) to present the results of the active enhanced *in situ* bioremediation (EISB) demonstration that was conducted at the Western Non-Aerospace Non-Industrial (WNN) Easement of the Inactive Rancho Cordova Test Site (IRCTS) in Rancho Cordova, California (the "Site") in 2003 and 2004. The results of a semi-passive EISB demonstration that was conducted at the Longhorn Army Ammunitions Plant (LHAAP) in north-eastern Texas also as part of ESTCP Project CU-0219, "Comparative Demonstration of Active and Semi-Passive *In Situ* Bioremediation Approaches for Perchlorate Impacted Groundwater" are presented in a previous Final Report (Geosyntec, 2009a) and Cost and Performance Report (Geosyntec, 2009b). A demonstration test of the active EISB technology was initiated at the Naval Industrial Reserve Ordnance Plant (NIROP) portion of the ATK Thiokol, Inc. (ATK) Bacchus Works Facility in West Valley City, Utah, but completion of this demonstration was delayed and the results of the test at the IRCTS is being used to demonstrate the performance of the active EISB technology for ESTCP Project CU-0219.

Section 1 of this Report presents background information and summarizes the objectives of the demonstration. Section 2 describes the active bioremediation technology demonstrated in this work. Section 3 presents the performance objectives for the demonstration. Section 4 presents information on the IRCTS where the demonstration was conducted. Section 5 presents the test design and results of the demonstration. Section 6 presents the results of the performance assessment. Section 7 presents the results of a cost assessment of the technology and Section 8 discusses potential implementation issues with the technology. Appendix A presents a list of contacts of those involved in conducting the demonstration test and preparing this report; Appendix B presents the hydraulic analysis and design; Appendix C presents laboratory reports for chemical analysis; and Appendix D presents the results of a statistical analysis of oxidation/reduction potential (ORP) data.

1.1 Background

Perchlorate is an inorganic anion that consists of chlorine bonded to four oxygen atoms (ClO_4^-). It is a primary ingredient in solid rocket propellant and has been used for decades by Department of Defense (DOD), National Aeronautics and Space Administration (NASA), and the defense industry in the manufacturing, testing, and firing of rockets and missiles. On the basis of 1998 manufacturer data, it is estimated that 90 percent of the several million pounds of perchlorate produced in the United States (U.S.) each year is used by the military and NASA. Private industry has used perchlorate to manufacture products such as fireworks, safety flares, automobile airbags, and commercial explosives.

Perchlorate exhibits high solubility and mobility in water and is very stable, being degraded only under anaerobic conditions. Consequently, when perchlorate is released into a typical groundwater or surface water environment, it tends to persist and can migrate to great distances (many miles) in groundwater, as has been observed at many sites. Perchlorate released to the

subsurface many decades ago can also be retained in the pore spaces of low permeability materials such as silts and clays, representing a long term threat to groundwater and surface water. This can be particularly problematic in areas where artificial recharge has resulted in rising groundwater elevations, solubilizing perchlorate previously held within the unsaturated soil matrices.

The frequency of detection of perchlorate in groundwater and surface water has been steadily increasing since its initial identification as a chemical of regulatory concern in 1997. To date, U.S. federal and state regulatory agencies have reported detecting perchlorate in soil, groundwater, surface water, and/or drinking water at almost 400 sites in 35 states, the District of Columbia, and two U.S. commonwealths (United States Government Accountability Office (GAO), 2005). Detections were reported for military installations, commercial manufacturers, public water systems, private wells and residential areas. While concentrations exceeded part per million (ppm) levels at some military and manufacturing sites, approximately two-thirds of the sites (249 of 395) reported perchlorate levels at or below 18 micrograms per Liter (μg/L), the upper limit of US EPA's provisional cleanup guidance for perchlorate in 2005. More than half of the sites (224 of 395) were located in Texas and California, where regulatory agencies have conducted broad investigations to determine the extent of perchlorate in the environment. The highest concentrations of perchlorate (more than 500,000 μg/L for 11 different sites) were reported for sites in Arkansas, California, Nevada, Texas, and Utah, primarily related to rocket manufacturing or to the manufacture of perchlorate itself (GAO, 2005).

Perchlorate impacts at 110 of the sites was reportedly due to activities related to defense and aerospace, such as propellant manufacturing, rocket motor research and test firing, or explosives disposal. At 58 sites, perchlorate impacts were reportedly from manufacturing and handling, agriculture, and a variety of commercial activities such as fireworks and flare manufacturing. Interestingly, the source of the perchlorate was either undetermined or naturally occurring at more than 227 sites, of which 105 sites are located in the Texas high plains region, where perchlorate concentrations range from 4 to 59 μg/L (GAO, 2005).

The source of perchlorate in water supplies has typically been attributed to DOD, NASA and/or defense contractor facilities that have used ammonium perchlorate (AP) in rocket and missile propellants. However, in recent years, the reporting of sites impacted by perchlorate from non-military activities, including agriculture, mining and construction, fireworks displays, and production and use of electrochemically-produced (ECP) chlorine chemicals, has dramatically increased, changing the paradigm that perchlorate is solely a DOD cleanup responsibility.

Conventional technologies for the treatment of perchlorate-impacted groundwater are expensive. In California alone, the costs for remediation of perchlorate-impacted groundwater are expected to be in the billions of dollars, the cost of which may jeopardize major DOD and propulsion contractor production programs. Of the technologies being developed, bioremediation is among the most promising, because it has the potential to destroy perchlorate rather than transferring it to another waste stream (e.g., impacted resin or brine) requiring costly treatment or disposal. Recent bench- and small-scale field demonstrations are providing strong evidence that *in situ*

bioremediation can provide a less costly and less Operation and Maintenance (O&M)-intensive approach to remediating perchlorate-impacted groundwater. Specifically, EISB has potential to both destroy perchlorate source areas and to control the migration of the perchlorate plumes that are threatening drinking water supplies.

Enhanced *in situ* bioremediation of perchlorate impacted groundwater offers the potential to treat and destroy perchlorate without the need for disposal of residuals containing recovered perchlorate (as with above ground ion exchange) or extensive above ground treatment (as with *ex situ* bioremediation). One of the main factors that affects the success and cost of *in situ* bioremediation systems is the effectiveness of nutrient (electron donor) delivery and mixing in the subsurface. A variety of active, semi-passive and fully passive electron donor delivery systems have been employed to promote contaminant biodegradation. As further discussed in Sections 2, each of these delivery configurations has associated benefits and limitations with respect to ease of implementation and cost. This Report describes work conducted to demonstrate/validate (Dem/Val) the use of an active EISB approach at the IRCTS in California. The results of a separate demonstration of the use of a semi-passive EISB approach are presented in separate reports. The goal of the program is to demonstrate the efficacy of both approaches at a scale that is large enough to generate accurate full-scale design and cost information for widespread technology consideration and application at DOD and related sites.

1.2 Objectives of the Demonstration

The specific objectives of this technology demonstration are:

1. Demonstrate that perchlorate can be biodegraded *in situ* to acceptable levels (i.e., the practical quantitation limit or PQL of 4.0 µg/L) using *in situ* bioremediation with an active electron donor delivery methodology;

2. Evaluate the effectiveness of the electron donor delivery approach under *in situ* conditions, and generate design and performance data for full-scale application using this approach (e.g., cost per unit area or unit volume groundwater treated);

3. Evaluate the effects of the electron donor delivery approach on the acclimation, development and stability of the *in situ* microbial communities;

4. Evaluate the effects of the electron donor delivery approach on groundwater quality (e.g. production of sulfides or methane, or mobilization of dissolved metals), and assess its suitability for use in drinking water aquifers (to address direct regulatory concerns); and

5. Identify design and operational factors that influence successful implementation and continued operation of the *in situ* bioremediation approach.

One of the advantages of the active electron donor amendment approach over passive and semi-passive injection approaches is the potential to have less impact on secondary water quality characteristics because large quantities of electron donor are not injected at one time. The approach taken in the demonstration at the IRCTS was to limit the addition of electron donor to minimize the impact on secondary water quality characteristics while allowing for biodegradation of perchlorate.

1.3 Regulatory Drivers

In 2009, the United States Environmental Protection Agency (USEPA) established an Interim Drinking Water Health Advisory for perchlorate of 15 µg/L. The Office of Solid Waste and Emergency Response (OSWER) has also established a preliminary remediation goal (PRG) at National Priority List sites of 15 µg/L. Numerous states have promulgated enforceable standards for perchlorate in drinking water. For example, Massachusetts and California have established enforceable standards for perchlorate in drinking water of 2 µg/L and 6 µg/L respectively. These concentrations are considerably less than the concentrations present in groundwater at many sites throughout the United States. While *ex situ* treatment alternatives exist for perchlorate-impacted groundwater, they are often cost intensive, and therefore, this demonstration seeks to validate a more cost-effective technology that can meet the pending remediation goals. For this demonstration, the remediation target will be reduction of perchlorate concentrations to the current common PQL, which is 4.0 µg/L in most jurisdictions.

2. TECHNOLOGY

This Section describes the active EISB technology which is the subject of the demonstration described in this Report. Section 2.1 provides a description of the technology; Section 2.2 describes the development of the technology; and Section 2.3 discusses the advantages and limitations of the technology.

2.1 Technology Description

Enhanced *in situ* bioremediation has proven to be a cost effective approach for the treatment of perchlorate impacted groundwater under many different site conditions. One of the main factors that affects the success and cost of EISB systems is the effectiveness of nutrient (electron donor) delivery and mixing in the subsurface. A variety of active, semi-passive and fully passive electron donor delivery systems have been employed to promote *in situ* biodegradation. Each of these delivery configurations has associated benefits and limitations with respect to ease of implementation and cost. Active EISB systems have been shown to be effective (Geosyntec, 2002) in providing migration control over reasonably wide (and deep) perchlorate plumes with only a few extraction/injection wells. However, due to the continuous operation of active systems, permanent *ex situ* infrastructure is required, and operations and maintenance (O&M) costs can be significant. By comparison, passive systems employing slow-release electron donors do not require permanent *ex situ* infrastructure and minimize short term O&M costs, but the tight spacing of the injection points or wells makes the capital costs of the installations prohibitive for large and/or deep plumes. Longer term O&M costs for reinjection of additional electron donor required every year to several years can also be high. Passive systems also involve injecting large quantities of electron donor at one time and can reduce the hydraulic conductivity of the aquifer and have significant negative impacts on secondary water quality characteristics. Semi-passive systems integrate aspects of both the active approach (wider well spacing and less impact on secondary water quality characteristics) and the passive approach (minimal permanent *ex situ* infrastructure, lower O&M), and can provide a balance of capital and O&M costs for bioremediation deployment.

Active EISB of perchlorate involves on-going groundwater recirculation and the addition of electron donor on a continuous basis to stimulate natural microbiological populations. Active EISB approaches are similar to semi-passive approaches in that groundwater is recirculated between injection and extraction wells; however, with the semi-passive approach, groundwater is recirculated for an “active phase” of a limited duration (e.g., several days to several weeks) to distribute the electron donor, and then the recirculation system is shut off for a “passive phase” of longer duration (e.g., several months).

Groundwater extracted from one or several well, is amended with electron donor and injected into other wells along the line of the biobarrier. Some of the injected water flows back to the extraction well or wells and some water moves out in other directions. The ambient flow of groundwater from upgradient of the biobarrier is collected in the extraction well and some of the

flow is diverted around the ends of the biobarrier. The recirculation of groundwater is conducted on a continuous basis.

The electron donor used for the active approach must be sufficiently mobile to travel some distance between the injection and extraction wells, in order to achieve the desired electron donor coverage. Soluble electron donors such as sodium lactate, citric acid, or ethanol have been used in field applications, and it may be possible to use mobile forms of emulsified vegetable oil, methyl esters and other slower release forms of electron donor as well.

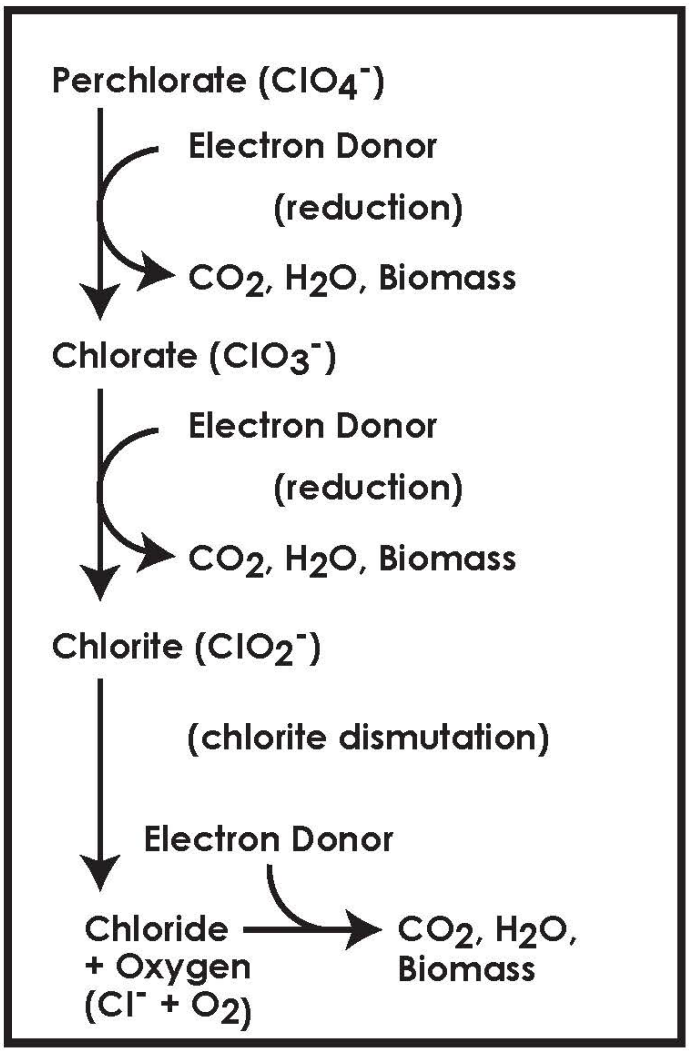
2.2 Technology Development

This section discusses the development of technologies for biodegradation of perchlorate and chlorinated ethenes such as TCE.

2.2.1 Biodegradation of Perchlorate

Laboratory research in the past has shown that perchlorate biodegradation results from microbially-mediated redox reactions, whereby perchlorate serves as an electron acceptor, and is reduced via chlorate to chlorite. Chlorite then undergoes a biologically-mediated dismutation reaction, releasing chloride and oxygen and carbon dioxide (CO_2) (**Figure 2-1**). A variety of electron donors have been used to stimulate perchlorate reduction using pure or mixed microbial cultures, including alcohols (e.g., ethanol, methanol), organic acids (e.g., acetate, lactate, citrate, oleate), edible oils (e.g., canola oil) and some sugar mixtures (e.g., corn syrup). A variety of microorganisms have been identified as possessing the ability to reduce perchlorate (Coates et al., 1999), including various *Dechlorosoma*, *Dechloromonas*, *Rhodocyclus*, *Azospirillum*, and *Ferribacterium* species, and perchlorate-degrading bacteria have generally been shown to be ubiquitous in subsurface environments.

In 1999, three research groups, including Geosyntec, Envirogen and the Southern Illinois University (SIU; Dr. John Coates) were awarded research grants under the U.S. DOD Strategic Environmental Research & Development Program (SERDP) to evaluate the ubiquity of perchlorate-degrading bacteria in differing geographical, geological and geochemical environments, and to assess the widespread applicability of *in situ* bioremediation as a remediation technology for perchlorate-impacted DOD sites. Through this research, laboratory microcosm studies were conducted for more than 12 independent DOD and defense contractor test sites around the nation. Perchlorate biodegradation was observed at essentially all test sites (pH adjustment was required for some test sites), indicating that the distribution of perchlorate-biodegrading bacteria in subsurface environments is widespread. Perchlorate biodegradation was stimulated over site-specific perchlorate concentrations ranging from 250 µg/L to in excess of 660,000 µg/L. Biodegradation typically reduced perchlorate concentrations below the PQL of 4 µg/L, making *in situ* bioremediation an appropriate technology for site remediation. The key to successfully implementing *in situ* bioremediation of perchlorate appears to be the addition of appropriate carbon substrates in adequate quantities to reduce competing electron acceptors



Pathway for the Biodegradation of Perchlorate
Active Perchlorate Bioremediation Demonstration

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Figure **2-1**

Perchlorate Pathway_July2012.ai

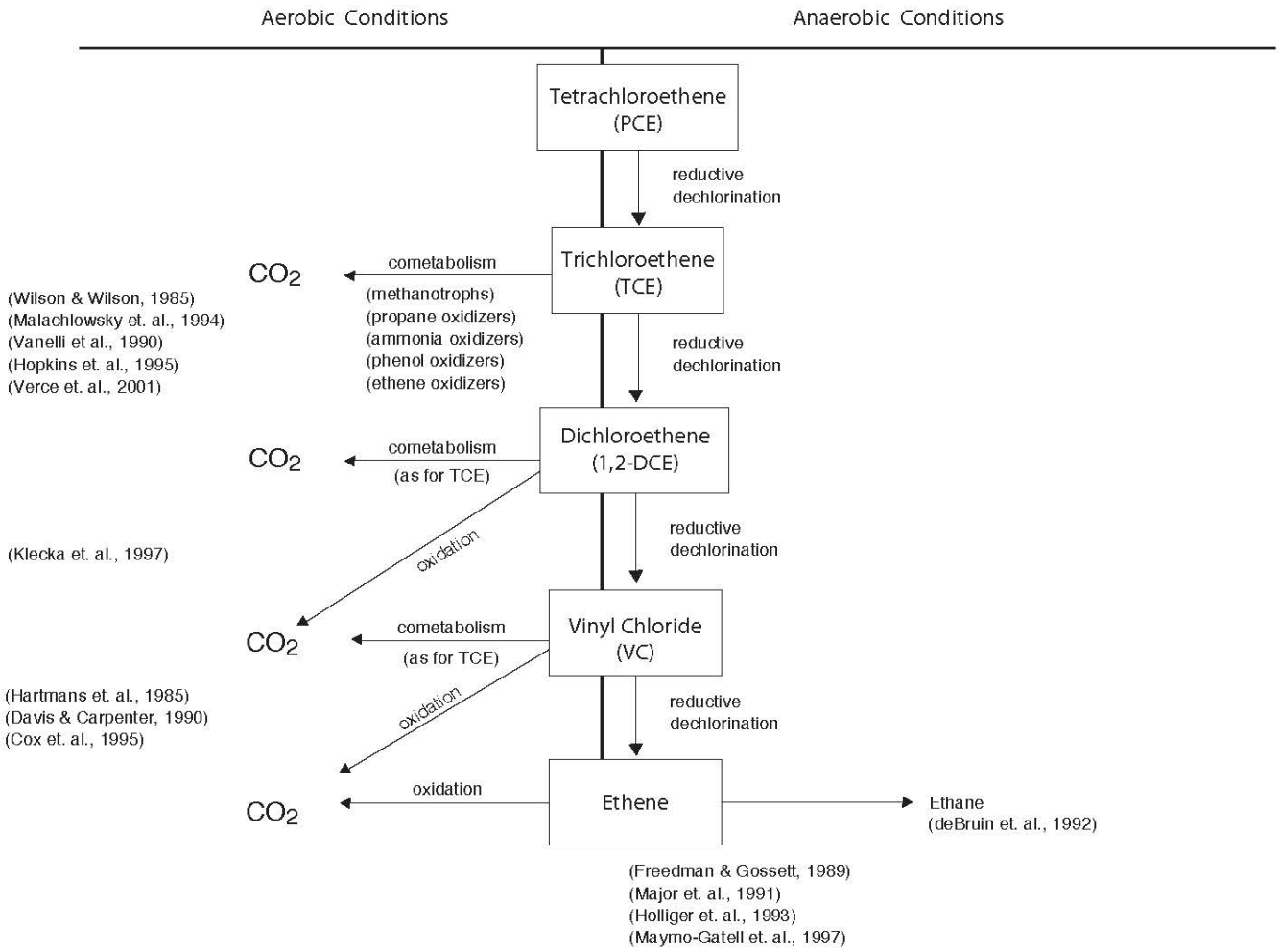
present in the groundwater (e.g., oxygen and nitrate), and to promote the perchlorate reduction reaction.

While data from bench-scale and small field tests provide evidence that *in situ* bioremediation has the potential to be a cost-effective remediation alternative for perchlorate-impacted sites, little had been done to critically evaluate *in situ* bioremediation design configurations that can be widely applied to perchlorate sites. Experience indicates that the greatest factor determining success of *in situ* bioremediation for perchlorate plumes is effective electron donor delivery. Perchlorate plumes at many DOD sites are very wide and deep, prohibiting standard bioremediation approaches (e.g., injection or emplacement of electron donors using direct push [e.g., geoprobe] methodologies). Therefore, new electron donor delivery strategies need to be developed for these types of sites.

As indicated earlier, laboratory research programs conducted under the SERDP have conclusively shown that perchlorate-reducing bacteria are ubiquitous, and that electron donor addition can effectively promote perchlorate degradation from a wide range of starting concentrations under varying geochemical conditions. Further to these laboratory studies, Geosyntec has successfully demonstrated *in situ* bioremediation of perchlorate in several small-scale field demonstrations at sites in California and Nevada. In one demonstration (SERDP CU-1164), Geosyntec demonstrated perchlorate biodegradation in a deep aquifer (100 feet below ground surface) at the Aerojet Superfund site in California (Cox et al., 2001). Perchlorate concentrations in the groundwater declined from 8,000 μg/L to less than the PQL of 4 μg/L within 35 feet of the electron donor delivery well. More recently, Geosyntec has successfully demonstrated *in situ* bioremediation of perchlorate at a second field demonstration site, reducing perchlorate concentrations from 220 μg/L to <4 μg/L in water being recharged to a drinking water aquifer (at 100 to 150 gallons per minute {gpm}) from an existing *ex situ* treatment system. In both studies, ethanol and acetate were shown to be effective electron donors.

2.2.2 Biodegradation of TCE

Laboratory and field demonstrations have shown that naturally-occurring microorganisms in subsurface environments (e.g., groundwater) can degrade chlorinated volatile organic compounds (VOCs) such as tetrachloroethene (PCE) and TCE to non-chlorinated, environmentally-acceptable end products such as ethene, CO_2, water and chloride (Major et al., 2002). While these biodegradation reactions can occur under a wide range of environmental conditions, the dominant TCE biodegradation mechanism in groundwater environments is reductive dechlorination, which involves the sequential replacement of chlorine atoms on the alkene molecule with hydrogen atoms. Under reducing conditions, TCE serves as an electron acceptor and is dechlorinated via cis-1,2-dichloroethene (cis-1,2-DCE) and vinyl chloride (VC) to ethene. Hydrogen, typically produced during the bacterial metabolism of simple organic carbon compounds such as alcohols, organic acids, sugars or edible oils, serves as the electron donor in the dechlorination reactions. **Figure 2-2** shows the common biodegradation pathways for TCE.



Pathways for the Degradation of Chlorinated Ethenes
Active Perchlorate Bioremediation Demonstration

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Figure **2-2**

Pathway_chlorinated ethenes_July2012.ai

Specific dehalorespiring bacteria called *Dehalococcoides* (*Dhc*) are now known to mediate the complete dechlorination of PCE and TCE to ethene (Maymó-Gatell et al., 1997). While sulfate-reducing and methanogenic bacteria appear to possess the ability to mediate the initial steps of dechlorination of PCE and TCE to cis-1,2-DCE, specific dehalorespiring microorganisms appear to be required to mediate further and complete dechlorination of cis-1,2-DCE via VC to ethene. Unfortunately, these dehalorespiring microorganisms do not appear to be ubiquitous. As a result, dechlorination of PCE and TCE stalls at cis-1,2-DCE at many sites, resulting in the accumulation of cis-1,2-DCE.

Research in the last few years has resulted in the isolation of several natural, non-pathogenic microbial consortia that are capable of mediating complete dechlorination of TCE to ethene. For example, the General Electric Company and Remediation Technologies Development Forum (RTDF; a collaboration between industry and government) isolated the Pinellas culture, while Geosyntec and the University of Toronto isolated a dehalorespiring culture referred to as KB-1™ (KB-1). These cultures have not been genetically modified in any manner; but are simply enrichments derived from naturally-occurring bacteria in soil and groundwater where TCE degradation occurs. Microbial testing has consistently found these microbial cultures to be free of pathogens. Field demonstrations at sites across the United States have shown that these microorganisms can be added to aquifers (a process termed bioaugmentation) to promote PCE and TCE dechlorination to ethene at sites where this activity otherwise does not occur, or does not occur at sufficient rates to meet remedial objectives. To date, KB-1 has been used to improve bioremediation at more than 300 sites in 36 US States, Canada, five European countries and in Malaysia.

2.3 Advantages and Limitations of the Technology

The active EISB technology or approach which is the subject of this demonstration can be used as an alternative to groundwater extraction and above ground treatment (pump and treat) or as an alternative to other EISB approaches (i.e., semi-passive or passive). Advantages and limitations of the active EISB approach relative to each of these alternatives are discussed below.

The active EISB technology has the following advantages over pump and treat technologies which involve long-term groundwater extraction and *ex situ* treatment typically using bioreactors (fluidized-bed or fixed-film) or ion exchange:

- Active EISB will destroy perchlorate rather than simply transferring it to another medium such is accomplished with above ground treatment using ion exchange.

- Active EISB can directly treat perchlorate in source areas, as well as perchlorate-impacted groundwater as it pass through a linear biobarrier system.

- Active EISB has the ability to treat co-contaminants such as TCE as part of a single treatment strategy, which is not possible with *ex situ* ion exchange or bioreactor technology.

The active EISB technology has the following limitations over pump and treat technologies:

- The effectiveness of active EISB may be limited by the occurrence of specific geochemical conditions (e.g., high sulfate) that may require larger quantities of electron donor and sulfide production.

- Active EISB has the potential to adversely impact secondary groundwater quality through mobilization of metals and production of sulfides or methane if excess amounts of electron donor are added.

- The effectiveness of active EISB may be limited by the presence of co-contaminants that may be inhibitory to biodegradation (e.g., chloroform, hydrogen sulfide).

The active EISB approach, with ongoing operation of a groundwater recirculation system, has the following advantages over passive EISB approaches:

- Active systems require fewer wells or injection points because the groundwater recirculation provides an induced flow to distribute electron donor across the natural flow of groundwater across greater distances. This factor is particularly relevant when the target treatment zone is deep and the costs to install wells or injection points are high.

- Active systems do not inject unduly high concentrations of electron donor at one time as is typical with passive systems. The more moderate concentration of electron donor added to active systems reduces the potential for impacts to secondary water quality characteristics (such as increasing the concentrations of iron and manganese, sulfide and methane) and reduces the tendency for electron donor to be consumed in biological pathways that will not contribute to perchlorate reduction (i.e., methane generation).

- Active systems do not inject large volumes of oil emulsion that can reduce the hydraulic conductivity of the treatment zone and cause diversion of groundwater around the treatment zone.

The active approach has the following limitations relative to passive approaches:

- Active systems require the installation of permanent injection wells to allow for groundwater recirculation and amendment of electron donor. Passive systems can use direct push injection points rather than permanent wells.

- Active systems require ongoing groundwater recirculation and amendment with electron donor.

The active approach has the following advantage relative to semi-passive approaches:

- The active approach results in less variation in the concentration of electron donor than semi-passive systems but both active and semi-passive have less variations than with the

passive approach. As discussed earlier, variations in the concentration of electron donor can negatively impact secondary water quality characteristics.

The active approach, with continuous operation rather than periodic operation of a groundwater recirculation system, has the following disadvantages over semi-passive approaches:

- The groundwater recirculation equipment of an active system needs to be dedicated to a specific set of injection and extraction wells and cannot be moved from one area to another in sequence, thus avoiding significant capital costs.

- The operating costs for active systems can be greater than for semi-passive systems because: 1) the active system is operated continuously; and 2) the injection wells can be more susceptible to biofouling because the injection of electron donor is done on a continuous rather than periodic basis.

- The equipment required for active operation can be more complex and is more likely to require complex controls and permitting because of the continuous nature of the operation.

3. PERFORMANCE OBJECTIVES

The performance objectives for this Demonstration are shown in **Table 3-1** and are discussed in more detail below.

3.1 Ease of Installation

The ease of installation of electron donor injection components is an important factor in maintaining low installation costs for the EISB technology. Ideally, the installation can be accomplished using standard, readily available materials and components by contractors without special training or knowledge.

This criterion can be evaluated based on the experience of demonstration operators and the actual availability and costs of installed equipment.

This objective was achieved during the demonstration based on experience with the actual installation of the electron donor delivery system at the IRCTS. The equipment required for the active recirculation and injection of electron donor were all readily available through local drillers and plumbing suppliers. The ClO_2 biofouling control system was also available and straightforward to install. The procedures used to install the equipment were standard and well established procedures for local drillers and the procedures were simple enough to be conducted by field technicians with training in basic plumbing techniques.

3.2 Ease of Electron Donor Delivery Events

The ease of electron donor delivery is an important factor in maintaining low O&M costs. Ideally, the electron donor delivery can be conducted with minimal special training for operators conducting the events, with minimal special equipment and in a short period of time.

This criterion can be evaluated based on the experience of operators and the costs of operating the system.

This objective was achieved during the demonstration based on experience of field staff with the actual operation of the system. The activities and procedures required for the recirculation of groundwater and addition of electron donor delivery were simple enough to be conducted by field staff with minimal specialized training and effort. It is believed that the pulsed injection of electron donor over one hour each day followed by an injection of ClO_2 was an effective operating strategy for controlling biofouling of the injection well.

3.3 Enhancement of Microbiological Activity

The enhancement of microbiological activity is a critical factor to the success of the EISB technology because it is this activity that degrades the perchlorate in the subsurface.

TABLE 3-1: PERFORMANCE OBJECTIVES
Active Perchlorate Bioremediation Demonstration

Performance Objective	Data Requirement	Success Criteria
Qualitative Performance Objectives		
1) Ease of Installation of Electron Donor Delivery Components	Experience of demonstration operators; actual availability and costs of installed equipment	Electron donor delivery system can be readily installed by standard industry procedures/contractors
2) Ease of Electron Donor Delivery Events	Experience of demonstration operators; and costs of events	Electron donor delivery events can be conducted with minimal training and effort
3) Enhancement of Microbiological Activity	Groundwater and soil analyses for geochemical characterization	Electron donor addition enhances microbiological activity in the treatment zone
4) Ease of Performance Monitoring and Validation	Quality of data and ability to interpret and quantify biodegradation with confidence	Performance monitoring network allows straightforward data collection, interpretation and validation
Quantitative Performance Objectives		
5) Reduction in Perchlorate Concentration	Groundwater sampling of performance monitoring wells	Perchlorate concentrations reduced to practical quantitation limit of 4 µg/L
6) Radius of Influence and Distance for Degradation	Groundwater sampling of performance monitoring wells	Radius of influence for electron donor addition will extend to target treatment area and perchlorate will be degraded before groundwater reaches the furthest downgradient performance monitoring wells.

Notes:
µg/L - micrograms per Liter

This criterion can be evaluated based on the results of groundwater and soil analyses for geochemical parameters.

This objective was achieved based on the results of chemical and geochemical characterization. Groundwater monitoring data for chemical and geochemical parameters demonstrated that electron donor addition enhanced microbiological activity in the treatment zone. Significant and sustained reductions in ORP were observed following addition of electron donor and provide the first indication that biological activity was enhanced by the addition of electron donor. Additional evidence of enhanced microbial activity was demonstrated by the reductions in perchlorate concentrations. Groundwater sampling of performance monitoring wells demonstrated that the average perchlorate concentrations were reduced to below the PQL of 4.0 μg/L during the operating period. The average perchlorate concentrations measured in: (1) MW-1 from Day 29 to the end of amendment injection period (2.6 μg/L); and (2) STSW-138A from Day 85 to the end of amendment injection period (2.9 μg/L) were all less than 4.0 μg/L.

3.4 Ease of Performance Monitoring and Validation

The ease of performance monitoring and validation is an important factor to demonstrate that the objective of perchlorate reduction has been accomplished.

This criterion can be evaluated by assessing the quality of data and ability to interpret and quantify biodegradation with confidence.

This objective was achieved during the demonstration based on the data obtained during the demonstration. The quality of the data obtained and the ability to interpret this data and quantify biodegradation with confidence demonstrated that the performance monitoring network allowed for straightforward data collection, interpretation and validation.

3.5 Reduction in Perchlorate Concentration

The reduction of perchlorate concentrations in groundwater is the most critical objective of demonstration. This is a quantitative objective of achieving an average concentration of perchlorate to the practical quantitation limit (PQL) of 4 μg/L.

This criterion can be assessed based on the results of chemical analysis of groundwater samples collected from performance monitoring wells.

This objective was achieved based on groundwater sampling of performance monitoring wells which demonstrated that the average perchlorate concentrations were reduced to below the PQL of 4 μg/L during the operating period.

3.6 Radius of Influence and Distance for Degradation

The radius of influence and distance for degradation of perchlorate is an important factor in determining the effectiveness of the electron donor distribution system.

This criterion can be assessed based on groundwater sampling of performance monitoring wells during the tracer test and following electron donor addition to demonstrate that the radius of influence for electron donor addition extends between injection and extraction wells and perchlorate is degraded before groundwater reaches downgradient performance monitoring wells.

This objective was achieved during the demonstration based on groundwater sample results from performance monitoring wells following system operation which demonstrated that the radius of influence for electron donor extends to the performance monitoring wells and that perchlorate was degraded before groundwater reached downgradient performance monitoring wells.

4. SITE DESCRIPTION

This Section presents information on the IRCTS where the demonstration was conducted. Section 4.1 describes the site location and history; Section 4.2 describes the site geology/hydrogeology; and Section 4.3 describes the contaminant distribution.

4.1 Site Location and History

Figure 4-1 provides a site location map showing the boundaries of the IRCTS and the WNN Easement. The demonstration test area is located within Aerojet's 60-foot WNN Easement on the western boundary of the original IRCTS configuration. **Figure 4-2** shows the location of the extraction, recharge and monitoring wells used as part of the demonstration test.

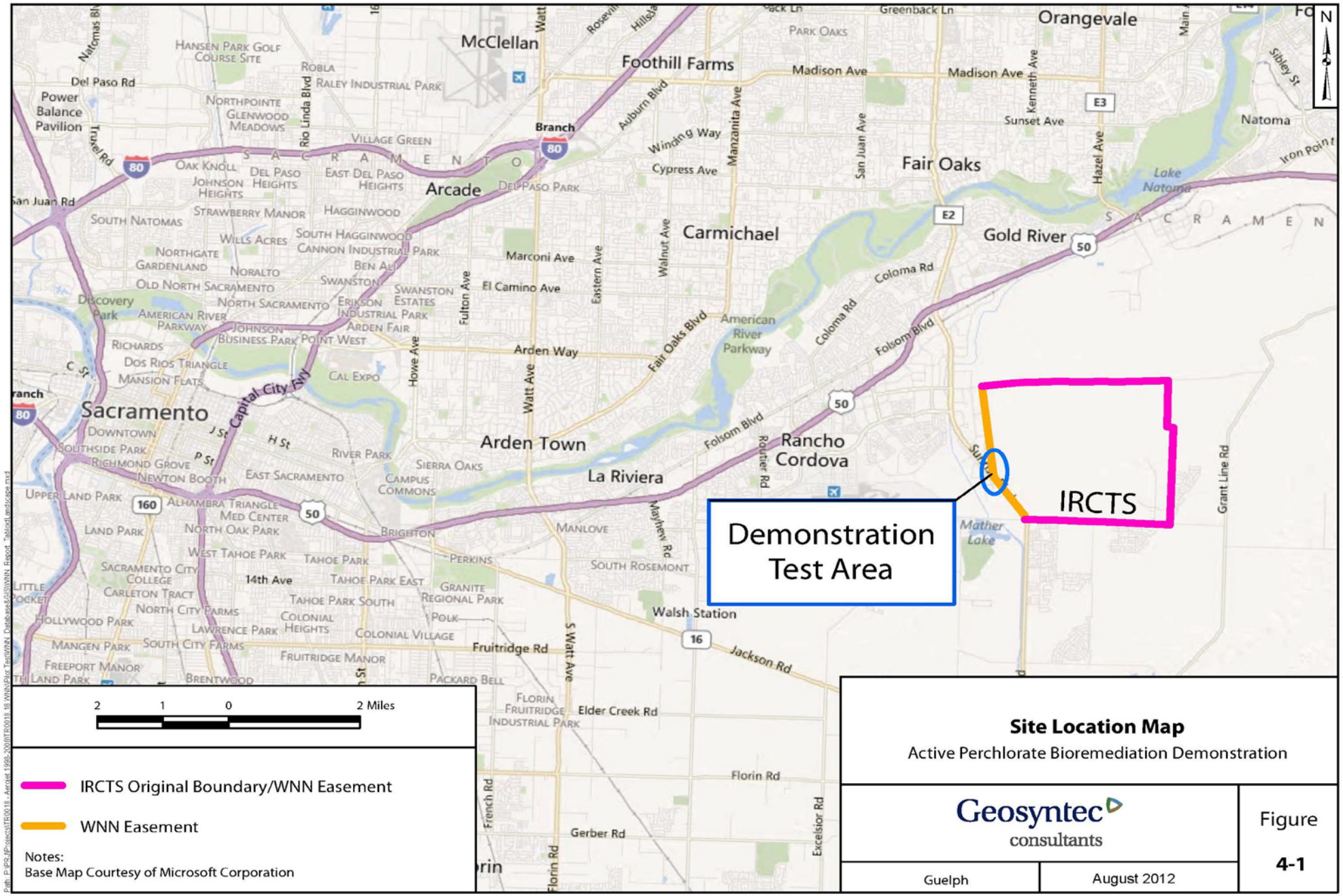
The IRCTS was used between 1956 and 1969 for a variety of aerospace related activities including testing of solid-rocket motors and liquid rocket engines.

4.2 Site Geology/Hydrogeology

The Site is situated on a dissected alluvial plain in the southeastern margin of the Sacramento Valley. The area is underlain by over 1,000 feet of sediments that include, from youngest to oldest: the Quaternary South Fork Gravels, the Quaternary-Tertiary Laguna Formation, the Tertiary Mehrten, Valley Springs, and Ione Formations, and the Cretaceous Chico Formation (CDWR, 1964, 1974).

Groundwater at the site occurs in various hydrostratigraphic units within the Laguna and Mehrten Formations . The Laguna Formation is described as a predominately fine-grained, non-volcanic fluvial deposit. Contact with the underlying Mehrten Formation is gradual, and a 60- to 100-foot transition zone has been defined in the general area of the IRCTS and areas to the west (ENSR, 2001). The transition zone has been identified by the presence of intercalated brown and black sands of volcanic origin and lower natural gamma response (ENSR, 2001). Underlying the transition zone, the Mehrten Formation consists of interbedded black sands and gravels with occasional thin silts and clays. A blue clay is present under these sands and gravels, which represents the top of the underlying Valley Springs Formation. In the vicinity of the demonstration test area, the top of the Mehrten Formation is shown to be at an elevation of approximately -100 feet below sea level or a depth of about 250 feet below ground surface (bgs) (CDWR, 1964).

Groundwater flow in the region is primarily to the west-southwest under horizontal gradients between 0.0027 and 0.0032 foot per foot (ft/ft) (ENSR, 2001). Vertical gradients across the Site range from no gradient to downward gradients of up to 0.12 ft/ft. Pumping tests (step-drawdown and constant-rate) were performed at RW-1 during January 2003 by GeoTrans, Inc. (GeoTrans). Results of the pumping tests indicated that the hydraulic conductivity of the shallow aquifer ranges from 65 to 100 ft/day (see Section 5.2.1 for more details on these tests).


Demonstration Test Area
IRCTS
Sacramento
Arden Town
Rancho Cordova
Carmichael
Fair Oaks
Orangevale
Foothill Farms
McClellan
Arcade
Gold River
La Riviera
Walsh Station
Natoma
Lake Natoma
Mather Lake
American River Parkway
Capital City Fwy
Folsom Blvd
Coloma Rd
Fruitridge Rd
Florin Rd
Elder Creek Rd
Jackson Rd
Gerber Rd
Madison Ave
Marconi Ave
El Camino Ave
Arden Way
Sunset Ave
Greenback Ln
Del Paso Rd
Auburn Blvd
Watt Ave
Howe Ave
Fulton Ave
Eastern Ave
Walnut Ave
Manzanita Ave
San Juan Ave
Hazel Ave
Grant Line Rd
Mayhew Rd
Routier Rd
S Watt Ave
Cypress Ave
Winding Way
Fair Oaks Blvd
Branch
Truxel Rd
Rio Linda Blvd
Natomas Blvd
Kenneth Ave
Sibley St
Iron Point
N
2 1 0 2 Miles
IRCTS Original Boundary/WNN Easement
WNN Easement
Notes:
Base Map Courtesy of Microsoft Corporation
Site Location Map
Active Perchlorate Bioremediation Demonstration
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Figure
4-1

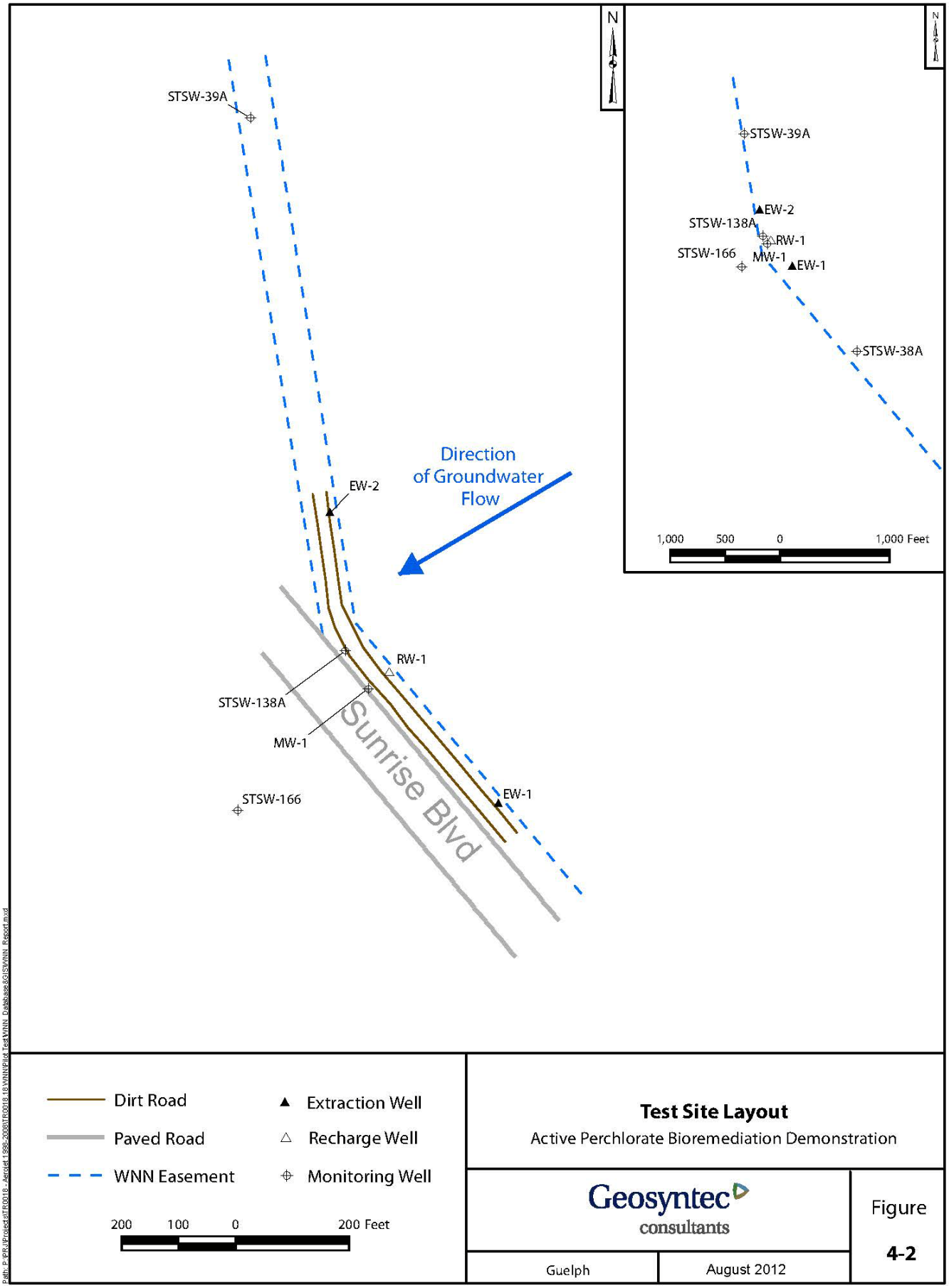
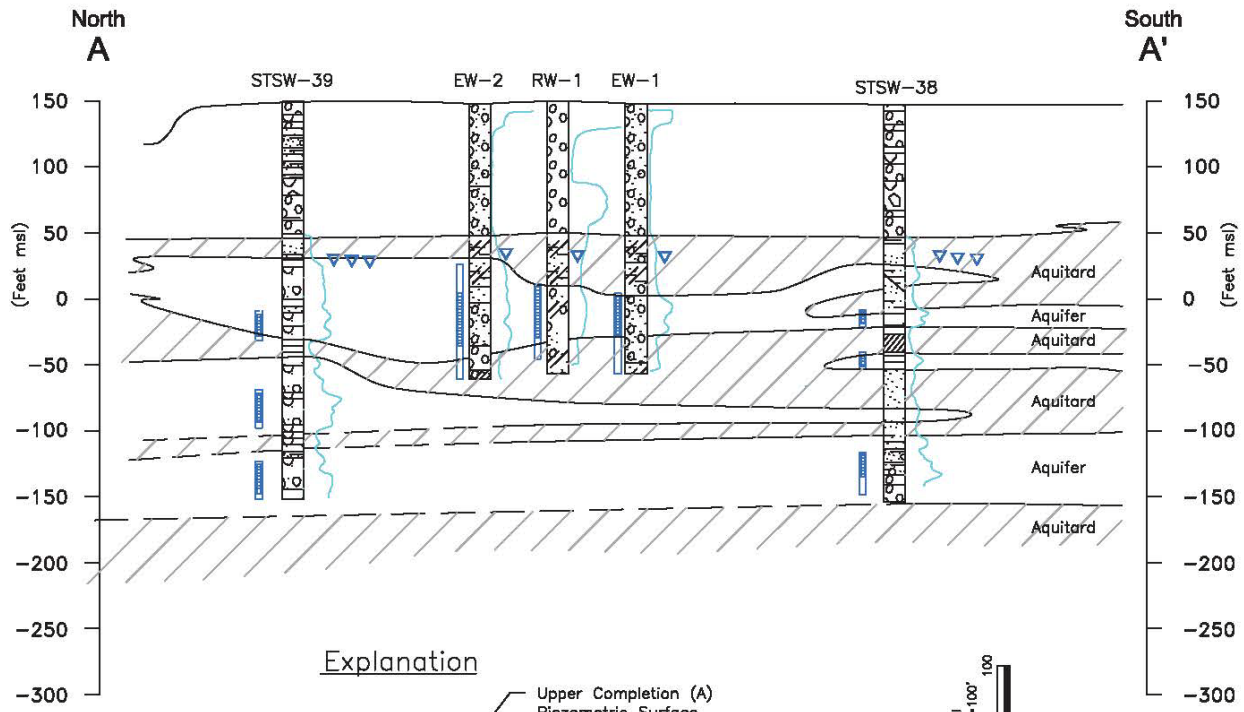

N
STSW-39A
EW-2
STSW-138A
RW-1
STSW-166
MW-1
EW-1
STSW-38A
1,000 500 0 1,000 Feet
Direction of Groundwater Flow
Sunrise Blvd
Dirt Road
Paved Road
WNN Easement
Extraction Well
Recharge Well
Monitoring Well
200 100 0 200 Feet
Test Site Layout
Active Perchlorate Bioremediation Demonstration
Geosyntec consultants
Guelph
August 2012
Figure 4-2
Path: P:\PR\Project\TR0018 - Arnold 1998-2008\TR0018.16\WNN\Pilot Test\WNN_Database.&GIS\WNN_Report.mxd

Figure 4-3 shows a generalized hydrostratigraphic cross-section in the vicinity of the test site. In this area, undifferentiated quaternary deposits are present from ground surface to approximately 100 ft bgs, which is underlain by a low permeability layer of silty clay (10 to 75 ft), prior to encountering the Laguna formation. The demonstration test was conducted in the shallowest aquifer of the local Laguna Formation, which extends from 120 to 182 feet bgs (thickness of 62 feet). In the demonstration test area the Laguna formation consists of gravel and silty and clayey sands. Another low permeability silty clay layer is present below the Laguna formation, followed by the Laguna-Mehren transition zone to a depth of approximately 250 ft bgs. Depth to groundwater was approximately 122 feet bgs prior to the initiation of the pilot test, which suggests that aquifer is unconfined or partially confined because the water level is near the top of the aquifer.

4.3 Groundwater Chemistry

The wells in the vicinity of the test area produce a calcium-magnesium bicarbonate groundwater with a total dissolved solids (TDS) concentration of approximately 160 mg/L. Prior to the initiation of the test, the water contained perchlorate and TCE at concentrations of up to 4,600 µg/L and 17 µg/L respectively. The concentrations of cis-1,2-DCE and VC were below their Practical Quantitation Limits (PQLs), indicating intrinsic TCE biodegradation was negligible. Nitrate and sulfate concentrations were low (maximums of 2.1 and 11 mg/L, respectively). Dissolved oxygen (DO) concentrations in the various wells ranged from 0.86 to 4.55 mg/L, suggesting aerobic conditions, however oxidation-reduction potentials (ORP) ranged from –128 to 188 mV, suggesting some variability in baseline redox conditions in the demonstration test area. Measurements of general indicators of biological activity, including volatile fatty acid (VFA) and dissolved hydrocarbon gas (DHG) testing, biochemical and chemical oxygen demand (BOD and COD), and testing for general bacterial DNA as well as *Dehaloccoides ethenogenes (Dhc)*, indicated limited biological activity in the groundwater.



Notes:

1. Water levels were measured October 2001, except EW-1, EW-2, and RW-1, which were measured April 7, 2003.
2. Correlations are limited above water table.
3. This cross-section illustrates the generalized geology. Lenses less than five feet thickness are not illustrated.
4. NS = Not Sampled

From: GeoTrans Inc. 2003

Generalized IRCTS Hydrostratigraphic Cross Section A-A'
Active Perchlorate Bioremediation Demonstration

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Figure **4-3**

Cross Section A-A' JULY2012.ai

5. DESIGN

This section describes the design and the results of the demonstration test. Section 5.1 presents a conceptual experimental design; Section 5.2 describes the baseline characterization that was conducted; Section 5.3 describes the design and layout of the technology components for the demonstration; Section 5.4 describes the field testing that was conducted; Section 5.5 describes the sampling methods; and Section 5.6 presents the results of the sampling conducted to monitor the field demonstration.

5.1 Conceptual Experimental Design

The goal of this demonstration test was to demonstrate an active *in situ* bioremediation approach that involved continuous recirculation of groundwater and delivery of electron donor to create a biologically active zone or biobarrier across a perchlorate plume, for the purposes of promoting perchlorate biodegradation and controlling plume migration.

In concept, the active biobarrier approach involved the use of alternating extraction and injection (recirculation) wells installed across a perchlorate plume. To add and mix the electron donor across the plume, groundwater was extracted, amended with electron donor, and recharged to the aquifer to promote *in situ* biodegradation of perchlorate and prevent migration of perchlorate beyond the biobarrier.

The active biobarrier consisted of two groundwater extraction wells (EW-1 and EW-2) and a single central electron donor delivery / recharge well (RW-1). These wells were oriented along a line approximately perpendicular to the prevailing direction of groundwater flow and were located within the WNN Easement. The extraction and recharge wells are all screened within the shallow aquifer: EW-1 is screened from 146 to 176 feet below ground surface (ft bgs); EW-2 is screened from 147 to 187 ft bgs; and RW-1 is screened from 140 to 180 ft bgs. During demonstration test operation, groundwater was extracted from EW-1 and EW-2, combined, amended with electron donor (ethanol), and recharged via RW-1. Demonstration test performance (hydraulic and biodegradation) was monitored using three performance monitoring wells in the test area (MW-1, STSW-138A and STSW-166). MW-1 was installed in April 2003, is located approximately 50 feet downgradient from RW-1, and is screened from 145 to 185 ft bgs. STSW-138A is located approximately 85 feet transgradient from RW-1, and is screened from 160 to 180 ft bgs. STSW-166 was installed in January 2004, is located approximately 350 feet downgradient from RW-1, and is screened from 120 to 180 ft bgs. **Figure 4-2** presents the site layout and the locations of these well.

5.2 Baseline Hydraulic and Chemical Characterization

Hydraulic characterization within the vicinity of the demonstration test was performed through pump testing and tracer testing. These activities are described below.

Hydraulic testing was conducted at recharge well RW-1, prior to the installation of the extraction wells to characterize the hydraulic properties of the shallow aquifer in the vicinity of the demonstration test. Two pumping tests were conducted by GeoTrans: (1) a step-drawdown test to evaluate the specific capacity of each well; and (2) a constant-rate test to determine the transmissivity and storage coefficient of the shallow zone of the aquifer.

The step-drawdown test consisted of five sequential 2-hour periods of constant-rate pumping at increasingly higher pumping rates. The five flow rates ranging from 30 gallons per minute (gpm) to 200 gpm. Drawdown was measured at RW-1 and used to determine the specific capacity of the well. Based on these data, the recharge capacity of RW-1 was then determined using the method of Driscoll (1986).

The constant-rate test was conducted at a pumping rate of 151 gpm for 25.5 hours. This rate was near the sustainable well yield for RW-1. Drawdown was measured in MW-1 and STSW-138A. The data were analyzed using the Cooper-Jacob straight line method, and the Hantush method for leaky aquifers, to determine the transmissivity, hydraulic conductivity and storativity of the aquifer. (Appendix B)

A numerical groundwater flow model was previously created with Visual MODFLOW™ to simulate the flow conditions in the vicinity of the biobarrier. After the pumping test results were analyzed, the data were used in combination with lithological data from the wells to refine the groundwater model. The refined model was then used to predict the capture zones and to optimize spacing and pumping rates for the extraction wells.

A conservative tracer test was conducted in August 2003 to: (1) evaluate groundwater flow patterns in the test area; and (2) confirm groundwater flow velocities and system residence times. Sodium bromide, prepared as a 0.35 kg/L stock solution in de-ionized water, was added continuously at a rate of 10.3 mL/min over a 14-day period to groundwater recharge at RW-1. This yielded a time weighted average (TWA) concentration of approximately 25 mg/L bromide. Breakthrough of the conservative tracer at the monitoring and extraction wells was monitored via collection and analysis of samples from test area wells on a semi-weekly to weekly basis. Samples were analyzed by ion chromatography (IC) by Aerojet's Environmental Laboratory (AEL).

Baseline groundwater conditions were determined from sampling activities conducted in the spring and summer months preceding implementation of demonstration test activities. Samples were analyzed for:

- Field parameters (specific conductivity, DO, ORP, pH and temperature);
- Perchlorate and associated degradation products (e.g., chlorate and chloride);
- VOCs;

- Dissolved hydrocarbon gases (DHGs; methane, ethane and ethene);
- Anions (chloride, bromide, nitrate, nitrite, phosphate and sulfate);
- Dissolved Metals;
- Ethanol and volatile fatty acids (VFAs; acetate, propionate);
- General carbon indicators (biological oxygen demand (BOD) and chemical oxygen demand (COD);
- Metabolic products (e.g., sulfide); and
- Microbial analysis (*Dhc* presence/absence).

Samples were collected from wells RW-1, MW-1, STSW-138A, STSW-39A/B, STSW-38A, and STSW-166, and were submitted to (depending on the analyte) either AEL, SiREM Laboratories, Calscience Environmental Laboratories and/or California Laboratory Services for analysis by the methods listed in **Table 5-1**.

5.3 Design and Layout of Technology Components

This section describes the design and layout of the technology components. Section 5.3.1 describes the system infrastructure; Section 5.3.2 describes the basis for electron donor addition rates; and Section 5.3.3 describes the bioaugmentation with a microbial culture to enhance degradation of chlorinated solvents.

5.3.1 System Infrastructure

The demonstration test infrastructure was installed and instrumented during the spring of 2003, and was completed in August 2003 (with the exception of monitoring well STSW-166, installed in January 2004). Well installations (RW-1, EW-1, EW-2, MW-1 and STSW-166) were completed by WDC Exploration and Wells by GeoTrans or Kleinfelder. Aerojet utilized various contractors for the installation of piping and electrical controls between the wells, the instrumentation of the electron donor delivery and biofouling control systems; and the construction of a secure control facility. **Figure 4-2** presents the layout of the groundwater extraction, electron donor delivery and monitoring wells in the demonstration test area. Aerojet removed the above-ground facilities after completion of the test operations.

5.3.2 Basis for Electron Donor Addition Rates

Ethanol was used as the electron donor because of its efficiency in promoting perchlorate degradation and because it does not adversely impact groundwater quality (other than a transient redox and alkalinity shift). Calculations to determine the electron donor demand for perchlorate

TABLE 5-1: SUMMARY OF LABORATORY ANALYTICAL METHODS
Active Perchlorate Bioremediation Demonstration

Parameter	Analytical Method	Method	Analytical Laboratory	Quantitation Limit	Sample Container	Preservative	Holding Time
Field Parameters (pH, DO, ORP, temperature)	Field Instrumentation	Field	NA	Varies	NA	NA	NA
Perchlorate, chlorate	Ion Chromatography	EPA 314, 300	AAL, CLS	4 µg/L, 0.02 µg/L	120 mL plastic	cool to 4°C	14 days
Volatile Organic Compounds	Gas Chromatography /Mass Spectrometry	EPA 601, 602	AAL	0.25 to 20 µg/L	2 x 40 mL VOA	HCl, cool to 4°C	14 days
Metals (dissolved)	Ion Chromatography (field filtered)	SW-846, 6010	AAL	See Table 4B	500 mL plastic	cool to 4°C	28 days
Anions (bromide, chloride, nitrate, nitrite, sulfate, phosphate)	Ion Chromatography	EPA 300	AAL	0.03 to 0.05 mg/L	120 mL plastic	cool to 4°C	2 to 28 days
Ethanol	Gas Chromatography /Mass Spectrometry	SW-846, 8260M	CEL	0.5 µg/mL	2 x 40 mL VOA	HCl, cool to 4°C	7 days
Volatile Fatty Acids (butyric, proprionic, lactic, acetic and pyruvic acids)	HPLC/UV	HPLC/UV	CEL	0.5 to 1 mg/L	250 mL amber glass	phosphoric acid, cool to 4°C	14 days
Dissolved Hydrocarbon Gases (ethene, ethane, methane)	Gas Chromatography/ Flame Ionizing Detector	RSK-175	CEL	1 mg/L	250 mL amber glass	HCL, cool to 4°C	7 days
Sulfide	Titrimetry, Potentiometry	NB 3653:139, EPA 376.2	CEL	0.05 mg/L	250 mL plastic	zinc acetate, sodium hydroxide to pH>9, cool to 4°C	7 days
Biochemical Oxygen Demand	Oxygen Electrode	EPA 405.1	CEL	1.0 mg/L	1000 mL pastic	cool to 4°C	2 days
Chemical Oxygen Demand	Titrimetry	EPA 410.4	CEL	5.0 mg/L	250 mL plastic	sulfuric acid to pH<2, cool to 4°C	28 days
Dehalococcoides	PCR Assay	NA	SiREM	NA	2 x 1L plastic	cool to 4°C	30 days

Notes:
AAL - Aerojet Analytical Laboratories, Rancho Cordova, California
CLS - California Laboratory Services, Rancho Cordova, California
CEL - CalScience Environmental Laboratory, Garden Grove, California
SiREM - SiREM Laboratories, Guelph, Ontario
NA - Not Applicable
DO - Dissolved Oxygen

and TCE in the groundwater at the demonstration test area are presented in **Table 5-2.** Degradation of perchlorate requires the addition of sufficient electron donor to reduce oxygen and nitrate prior to perchlorate reduction, whereas degradation of TCE requires the reduction of oxygen, nitrate, perchlorate, and sulfate prior to TCE reduction. The 24-hour time-weighted average electron donor concentration was initially 6 mg/L from demonstration test initiation through 16 March 2004, and 18 mg/L for the remainder of the pilot test. The initial concentration reflected the amount of electron donor stoichiometrically required to degrade perchlorate and TCE without excess. Following 16 March 2004, the concentration was increased 3-fold to provide excess electron donor to enhance the rate and extent of TCE dechlorination. Electron donor demand was calculated based on baseline concentrations of 0.02 mg/L TCE, 11 mg/L of sulfate, 1 mg/L perchlorate, 1 mg/L nitrate and 4 mg/L DO. Electron donor addition was achieved through 1-hour daily pulse additions of 2,580 mL pure ethanol at 43 mL/min (for the period of to 16 March 2004) and 4,150 mL pure ethanol at 69 mL/min (for the remainder of the demonstration test). The schedule of electron donor addition concentrations is presented in **Table 5-3**.

Additional electron donor was added immediately prior to each bioaugmentation event to provide suitable conditions for introduction of the dehalorespiring bacteria, as described in Section 5.3.3.

5.3.3 Bioaugmentation

Two separate bioaugmentation events were conducted to evaluate the potential to enhance TCE bioremediation. The first event (Bioaugmentation A) was conducted on 10 November 2003 (Day 63 of the demonstration test); the second event (Bioaugmentation B) was conducted on 24 March 2004 (Day 198). Both events consisted of amending the shallow aquifer with approximately 40 liters (L) of KB-1 (provided by SiREM Laboratories), a microbial consortium that contains the dehalorespiring bacteria *Dehalococcoides*.

Bioaugmentation A consisted of the injection of KB-1 via recharge well RW-1. The bioaugmentation sequence can be summarized as follows:

i) Approximately 6,200 gallons of groundwater from EW-1 and 170 gallons of groundwater from MW-1 were extracted into a surface holding tank for use in dispersing KB-1 from the recharge well following bioaugmentation. Ethanol was added to the extracted water to reduce oxygen levels so as to not adversely affect KB-1 during the flushing/dispersion process. Despite best efforts, the DO concentration in the tank water prior to KB-1 injection remained above 1 mg/L.

ii) The recirculation system was shut off and approximately 6 L of ethanol was injected into RW-1 over a 4 hour period to allow development of suitable redox conditions in RW-1 for KB-1 delivery.

iii) Approximately 40 L of KB-1 was injected into RW-1 under nitrogen/argon blanket to reduce exposure of the culture to oxygen.

TABLE 5-2: ELECTRON DONOR DEMAND CALCULATIONS

Active Perchlorate Bioremediation Demonstration

Electron Acceptor	Chemical Formula	Stoichiometry[a]	Ethanol Balanced Redox Reaction[b]	Molar Ratio[c]
Oxygen (O_2)	O_2	$O_2 + 4H^+ + 4e^- = 2H_2O$	$C_2H_6O + 3O_2 = 2CO_2 + 3H_2O$	1/3
Nitrate (NO_3^-)	NO_3^-	$2NO_3^- + 12H^+ + 10e^- = N_2 + 6H_2O$	$5C_2H_6O + 12NO_3^- + 12H^+ = 6N_2 + 10CO_2 + 21H_2O$	5/12
Sulfate (SO_4^{2-})	SO_4^-	$SO_4^{2-} + 10H^+ + 8e^- = H_2S + 4H_2O$	$2C_2H_6O + 3SO_4^{2-} + 6H^+ = 3H_2S + 4CO_2 + 6H_2O$	2/3
Perchlorate (ClO_4^-)	ClO_4^-	$ClO_4^- + e^- = ClO^- + 2O_2$	$2C_2H_6O + 3ClO_4^- = 3Cl^- + 4CO_2 + 6H_2O$	2/3
Trichloroethene (C_2HCl_3)	C_2HCl_3	$C_2HCl_3 + 6e^- + 3H^+ = C_2H_4 + 3Cl^-$	$C_2H_6O + 2C_2HCl_3 + 3H_2O = 2C_2H_4 + 2CO_2 + 6H^+ + 6Cl^-$	1/2

Electron Acceptor	Molecular Weight (g/mol)	In Situ Concentrations[d] (mg/L)	Molar Ratio	Ethanol Demand (mg/L)
Oxygen (O_2)	32.0	4.0	1/3	1.9
Nitrate (NO_3^-)	62.0	1.0	5/12	0.3
Perchlorate (ClO_4^-)	99.5	1.0	2/3	0.3
Sulfate (SO_4^{2-})	96.1	11	2/3	3.5
Trichloroethene (C_2HCl_3) (TCE)	131.4	0.02	1/2	0.004
Electron Donor Demand to Reduce Oxygen, Nitrate and Perchlorate				**2.5**
Electron Donor Demand to Reduce Oxygen, Nitrate, Perchlorate, Sulfate and TCE				**6.0**

Notes:

[a]Complete mineralization to the appropriate end products was assumed.

[b]Balanced redox reactions using ethanol were developed by adding the appropriate constituent half-reactions with the half-reaction for ethanol; whereby the ethanol (C_2H_6O) half-reaction is given by: $C_2H_6O + 3H_2O = 2CO_2 + 12H^+ + 12e^-$ (solutions are non-unique)

[c]Molar ratio is the number of moles of electron donor consumed per mole of constituent.

[d]Baseline perchlorate and trichloroethene results from STSW-39A measured from Nov '00 to July '01
Oxygen, Nitrate and Sulfate results estimated from previous microcosm studies for Alpha & Sigma Complex and former GET F Sprayfield

TABLE 5-3: ELECTRON DONOR ADDITION SCHEDULE

Active Perchlorate Bioremediation Demonstration

Date Range	Start Day	End Day	24-Hour Time-Weighted Average Electron Donor Concentration Added (mg/L)	Stoichiometric Demand to Reduce Oxygen, Nitrate and Perchlorate (mg/L)	Increase Over Stoichiometric Demand	Stoichiometric Demand to Reduce Oxygen, Nitrate, Perchlorate, Sulfate and TCE (mg/L)	Increase Over Stoichiometric Demand	Flow from EW-1 (gpm)	Flow from EW-2 (gpm)
8-Sep-03 to 18-Dec-03	0	104	6	2.5	2.4X	6	1X	20	40
18-Dec-03 to 3-Jan-04[1]	104	120	0	2.5	0X	6	0X	0	0
3-Jan-04 to 16-Mar-04	120	193	6	2.5	2.4X	6	1X	20	40
16-Mar-04 to 30-Apr-04	193	238	18	2.5	7X	6	3X	30	40

Notes:

1. System shut-down for holidays

iv) After a static period of 24 hours, the water in the holding tank was then injected via RW-1 at a rate of 60 gpm to disperse KB-1 from the recharge well and into the demonstration test area.

v) Standard system operation was resumed.

Bioaugmentation B consisted of injection of KB-1 via monitoring well MW-1. The bioaugmentation sequence can be summarized as follows:

i) Approximately 2,100 L of water was extracted from MW-1 into a surface holding tank and amended with ethanol to reduce DO concentrations and to achieve an ethanol concentration of 100 mg/L.

ii) Approximately 1,000 L of amended water was then injected back into MW-1 to create a zone of anoxic water around the screen of this well.

iii) Approximately 40 L of KB-1 was injected into MW-1 under nitrogen/argon blanket.

iv) The remainder of the water in the surface holding tank was then injected via MW-1 to disperse KB-1 from the well screen and into the formation.

v) Standard system operation was resumed, and the ethanol injection concentration was increased to a stoichiometric equivalent of three times the stoichiometric demand to enhance survival and activity of the added organisms.

5.4 Field Testing

The demonstration system was operated from September 2003 to April 2004. The activities conducted during the operation are described in the following subsections.

5.4.1 System Operation and Monitoring

System Operation

The system was initially operated by extracting groundwater from wells EW-1 and EW-2 at rates of approximately 20 gpm and 40 gpm respectively, beginning on 08 September 2003. On 16 March 2004, the flow rate at EW-1 was increased to 30 gpm to improve groundwater capture at this well. The demonstration test was terminated on 30 April 2004 (day 238). The extraction wells were equipped with submersible pumps set at 140 ft below top of casing (btoc). Pressure transducers with a pressure range of 10 psi were set at 133 ft btoc. Level controls were set at 130 ft btoc for low-level shut-off to limit drawdown and protect the pump and at 122 ft btoc for high-level "on" (assuming a static water level of 120 ft btoc). However, to the extent possible, the flow rate from each well was maintained at a sustainable flow rate that did not induce cycling of the pump.

The recharge well, RW-1 was operated at a flow rate of approximately 60 gpm, for the period up to 16 March 2004, and at a rate of approximately 70 gpm for the remainder of the demonstration test. RW-1 contained a back pressure valve at the wellhead and a pressure transducer with a range of 50 psi set at 122 ft btoc. A static water level of 120 ft btoc was assumed, thus level controls were set with a high-level shutoff at 92 ft btoc and a low-level "on" at 118 ft btoc. The high-level/pump-shutoff would prevent overflow in the event of well fouling (biological or mineral).

Groundwater from both extraction wells was combined and then directed through a filter system to remove particulates. The filter system was equipped with two sets of filters in parallel to allow filter change out without system shutdown. Following filtration, in-line flow sensors installed in each flow stream were used to continuously measure the flow rate of extracted groundwater from the individual wells. These data were logged automatically at 5-minute intervals. The flow from the two streams was then combined at a manifold "tee" and flowed through a third flow sensor. This latter sensor provided feedback control to the pumps to maintain steady extraction/recharge rates and controlled the delivery of tracer and/or electron donor solution to maintain a fixed concentration of these components in the amended groundwater to the recharge well. Following this third flow sensor, a Signet model 3-8750-1 probe continuously measured pH and ORP in the extracted groundwater, logging data at 5-minuite intervals. The combined groundwater was then amended with electron donor (see Section 5.5) using a chemical metering pump, and passed through an in-line mixer prior to recharge to the shallow aquifer via a submerged delivery line in the recharge well RW-1.

The system operation was controlled using a programmable logic controller (PLC) connected to a personal computer. The control system recorded the groundwater extraction rate and total volume, individual electrode measurements, and water levels in the extraction and recharge wells at 5-minute intervals.

System Maintenance and Monitoring

Operations and maintenance activities were performed by both Aerojet and Geosyntec. Monitoring tasks conducted by Aerojet personnel included:

- Inspection of the groundwater circulation system;
- Dosing of the RW-1 with chlorine dioxide for biofouling control;
- Filling of electron donor and tracer supply tanks as needed;
- Replacement of filters as needed; and
- Sampling and chemical analysis of samples.

Geosyntec personnel provided oversight of:

- Periodic downloading of automated data collection systems; and
- Bioaugmentation activities.

Biofouling Control

Chlorine dioxide gas was used to control biofouling of the electron donor delivery / recharge well. The chlorine dioxide generator (CDG) from CDG Technologies, Inc., used a pre-blended compressed gas cylinder to supply a pressurized mixture of nitrogen and chlorine gas (96% nitrogen: 4% chlorine), which was passed through a cylinder of sodium chlorite ($NaClO_2$) within the unit housing, generating 8% chlorine dioxide gas (ClO_2) in nitrogen. The amount of chlorine dioxide delivered during each dosing event was regulated by the gas flow rate, and the gas was piped directly into the recharge water at the well-head to control biofouling within RW-1. Chlorine dioxide dosing was accomplished by adding daily one-hour doses of 1 mg/L of ClO_2.

Performance Monitoring

Performance monitoring of groundwater chemistry at demonstration test wells consisted of weekly to monthly measurements of field parameters, perchlorate and other electron acceptors, and bioremediation parameters. The sampling frequencies for the various parameters are presented in **Table 5-4**.

Performance monitoring of groundwater microbiology consisted of periodic collection and analysis of groundwater samples for molecular characterization of *Dhc* using 16S rRNA polymerase chain reaction (PCR) techniques (SiREM Laboratories). These data confirmed the introduction, migration and survival of *Dhc* in the demonstration test groundwater following each bioaugmentation event.

Monitoring at injection well RW-1 was conducted by collecting samples from a sample valve located within the treatment system after electron donor addition and before the chlorine dioxide unit. Data provided for RW-1 represent the concentrations and chemistry of the water being injected into RW-1. These data provide "background" data to measure changes in groundwater chemistry and concentration between RW-1 and MW-1 that can be used to evaluate the effectiveness of the treatment system.

5.5 Sampling Methods

Depending on the analytical parameter, samples were submitted to either AEL, SiREM Laboratories, Calscience Environmental Laboratories and/or California Laboratory Services for analysis by the methods listed in **Table 5-1**.

TABLE 5-4: DEMONSTRATION TEST SAMPLING SCHEDULE

Active Perchlorate Bioremediation Demonstration

Parameter	Sampling Frequency				
	Baseline/Final	Semi-Weekly	Weekly	Bi-Weekly	Monthly
Baseline/Final Characterization					
Water Levels	All Wells[1]	--	--	--	--
Field Parameters[3]	All Wells	--	--	--	--
Perchlorate, Chlorate	All Wells	--	--	--	--
Volatile Organic Compounds	All Wells	--	--	--	--
Dissolved Metals	All Wells	--	--	--	--
Anions[4]	All Wells	--	--	--	--
Ethanol, Volatile Fatty Acids[5]	All Wells	--	--	--	--
Dissolved Hydrocarbon Gases[6]	All Wells	--	--	--	--
Sulfide	All Wells	--	--	--	--
BOC, COD	All Wells	--	--	--	--
Dehalococcoides ethenogenes	EW-1, EW-2, RW-1	--	--	--	--
Tracer Testing (2 weeks)					
Water Levels	--	PTA Wells[2]	--	--	--
Bromide	--	PTA Wells	--	--	--
Performance Monitoring					
Water Levels	--	--	PTA Wells	--	--
Field Parameters	--	--	PTA Wells	--	--
Perchlorate	--	--	PTA Wells	--	--
Anions	--	--	PTA Wells	--	--
Volatile Organic Compounds	--	--	--	PTA Wells	--
Dissolved Hydrocarbon Gases	--	--	--	PTA Wells	--
Dissolved Metals	--	--	--	PTA Wells	--
Ethanol, Volatile Fatty Acids	--	--	--	PTA Wells	--
Chlorate	--	--	--	--	PTA Wells
Sulfide	--	--	--	--	PTA Wells

Notes:

1 - All Wells = EW-1, EW-2, RW-1, MW-1, STSW-138A, STSW-166, STSW-38A, STSW-39A/B

2 - PTA wells = EW-1, EW-2, MW-1, STSW-138A, STSW-166

3 - Field Parameters = pH, dissolved oxygen, oxidation-reduction potential, temperature

4 - Anions = chloride, nitrate, nitrite, phosphate, sulfate

5 - Volatile Fatty Acids = acetic acid, butyric acid, lactic acid, propionic acid, pyruvic acid

6 - Dissolved Hydrocarbon gases = methane, ethane, ethene

5.6 Sampling Results

This section presents the results obtained during the demonstration. Section 5.6.1 presents data collected during baseline monitoring; Section 5.6.2 presents the results of pump testing and groundwater modeling; Section 5.6.3 presents the results of the tracer testing; Section 5.6.4 presents the results of redox and pH measurements; Section 5.6.5 presents the results of analysis of perchlorate analysis; Section 5.6.6 presents the results of TCE analysis; and Section 5.6.7 presents the results of supporting groundwater geochemistry.

5.6.1 Baseline Conditions

This section presents the results of baseline monitoring conducted prior to the injection of electron donor at the Site.

Table 5-5 presents the results of the baseline geochemical characterization of the test area wells. The laboratory reports for chemical analysis are presented in Appendix C. The key baseline groundwater chemistry can be summarized as follows:

- Baseline DO concentrations ranged from 0.86 to 4.55 mg/L. Baseline ORP values ranged from –128 to 188 mV.
- The groundwater pH was near-neutral, ranging from 6.9 to 7.8.
- Perchlorate concentrations ranged from non-detect (STSW-38A) at a PQL of 4 µg/L) to 2,600 µg/L (wells EW-2 and STSW-138A). Outside of the demonstration test area, perchlorate concentrations ranged up to 4,300 µg/L, with the highest concentration detected at well STSW-39A.
- Chlorate concentrations ranged from non-detect at a PQL of 0.02 mg/L to 0.32 mg/L.
- Chloride was detected in the demonstration test area at concentrations in the range of 2 to 4 mg/L.
- Nitrate concentrations were low, ranging from non-detect to 1.7 mg/L.
- Sulfate was detected in all wells at concentrations of 9 to 10 mg/L. Sulfide was not detected in any of the wells, at a PQL of 0.05 mg/L.
- Trichloroethene was detected in all wells except for EW-1. Concentrations ranged from 0.74 to 23 µg/L. Cis-1,2-dichloroethene and vinyl chloride, potential intermediate products of TCE dechlorination, were not detected above their PQL of 0.5 µg/L.

TABLE 5-5: BASELINE GROUNDWATER CHEMISTRY

Active Perchlorate Bioremediation Demonstration

			Well Identification							
Parameter	Units	Lab	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-38A	STSW-39A	STSW-39B
Field Parameters										
Dissolved Oxygen	mg/L	FLD	**4.55**	**3.84**	**0.860**	**3.00**	**0.98**	**1.25**	**1.39**	**2.39**
Oxidation-Reduction Potential	mV	FLD	**133**	**169**	**-110**	**188**	**-101**	**-128**	**-10**	**-44**
pH	pH units	FLD	**7.37**	**7.49**	**7.10**	**7.15**	**7.01**	**7.61**	**6.90**	**7.31**
Temperature	°C	FLD	**20.8**	**19.6**	**21.4**	**19.9**	**20.5**	**19.2**	**20.2**	**21.5**
Perchlorate and Degradation Products										
Perchlorate	µg/L	AAL	**300**	**2600**	**1400**	**2500**	**2600**	<4	**4300**	**410**
Chlorate	mg/L	CLS	**0.021**	**0.02**	**0.32**	<0.02	<0.02	**0.01**	<0.02	<0.02
Chloride	mg/L	AAL	**3.1**	**3.4**	**2.6**	**3.0**	**2.4**	**4.1**	**7.7**	**38**
Anions										
Nitrate	mg/L	AAL	**1.2**	**1.4**	**1.0**	**1.4**	**1.7**	**0.71**	**2.1**	**5.5**
Phosphate	mg/L	AAL	<0.3	**0.31**	<0.1	<0.3	**0.21**	**0.11**	**0.1**	<0.1
Sulfate	mg/L	AAL	**8.9**	**9.4**	**9.0**	**9.8**	**9.7**	**9.5**	**11**	**18**
Sulfide	mg/L	CEL	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Biodegradation Parameters										
Acetic Acid	mg/L	CEL	**1.8**	<1	**3.7**	NA	**2.9**	NA	NA	NA
Butyric Acid	mg/L	CEL	<1	<1	<1	NA	<1	NA	NA	NA
Propionic Acid	mg/L	CEL	<1	<1	<1	NA	**2.9**	NA	NA	NA
Pyruvic Acid	mg/L	CEL	<0.5	<0.5	<0.5	NA	<0.5	NA	NA	NA
Lactic Acid	mg/L	CEL	<1	<1	<1	NA	<1	NA	NA	NA
Biochemical Oxygen Demand	mg/L	CEL	<1	<1	<1	NA	<1	<1	<1	<1
Chemical Oxygen Demand	mg/L	CEL	<5	<5	<5	NA	<5	<5	<5	<5
Ethanol	mg/L	CEL	<0.1	<0.1	<0.1	NA	<0.1	NA	NA	NA
Dehalococcoides	+/-	SiR	ND	+++	NA	NA	NA	NA	NA	NA
Dissolved Hydrocarbon Gases										
Ethane	µg/L	CEL	<1	<1	<1	NA	<1	NA	NA	NA
Ethene	µg/L	CEL	<1	<1	<1	NA	<1	NA	NA	NA
Methane	µg/L	CEL	<1	<1	<1	NA	<1	NA	NA	NA

TABLE 5-5: BASELINE GROUNDWATER CHEMISTRY

Active Perchlorate Bioremediation Demonstration

			Well Identification							
Parameter	Units	Lab	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-38A	STSW-39A	STSW-39B
Volatile Organic Compounds										
Trichloroethene	µg/L	AAL	<0.5	**4.8**	**3.3**	**3.8**	**0.74**	**23**	**17**	**2.0**
cis/trans1,2-Dichloroethene	µg/L	AAL	NA	NA	NA	NA	NA	NA	NA	NA
Vinyl chloride	µg/L	AAL	NA	NA	NA	NA	NA	NA	NA	NA
Dissolved Metals										
Barium	mg/L	AAL	**0.012**	**0.023**	**0.0061**	**0.022**	**0.022**	**0.047**	**0.024**	**0.075**
Calcium	mg/L	AAL	**13**	**12**	**11**	**12**	**12**	**19**	**16**	**31**
Iron	mg/L	AAL	<0.3	<0.3	0.66	<0.3	<0.3	<0.3	<0.3	0.74
Magnesium	mg/L	AAL	**6.7**	**7.3**	**6.7**	**7.4**	**7.1**	**5.8**	**9.5**	**18**
Manganese	mg/L	AAL	<0.005	<0.005	0.055	<0.005	**0.0090**	**0.019**	**0.017**	**0.034**
Potassium	mg/L	AAL	<2	<2	<2	<2	<2	<2	<2	<2
Sodium	mg/L	AAL	**9.8**	**7.9**	**8.1**	**8.1**	**8.1**	**10**	**9.1**	**17**
Vanadium	mg/L	AAL	**0.0088**	**0.0062**	<0.006	**0.0072**	**0.0064**	**0.0065**	<0.006	<0.006
Zinc	mg/L	AAL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Notes:
AAL - Aerojet Analytical Laboratories, Rancho Cordova, California
CLS - California Laboratory Services, Rancho Cordova, California
CEL - CalScience Environmental Laboratory, Garden Grove, California
SiR - SiREM Laboratories, Guelph, Ontario
FLD - Field
NA - Not Applicable
< - analyte not detected; associated value is the reporting limit
ND - analyte not detected
Scale - Qualititative score for measurement of *Dehalococcoides* presence
Baseline samples were collected in August and September 2003

- Ethene and ethane, potential end products of TCE dechlorination, were not detected. Similarly, methane, an indicator of microbial (anaerobic) activity was not detected in these wells. The PQL for these dissolved hydrocarbon gases was 1 µg/L.

- Manganese was detected in STSW-138A, STSW-38A, STSW-39A and STSW-39B at concentrations from 0.009 to 0.034 mg/L. Iron was only detected in groundwater from STSW-39B (0.74 mg/L) and was not detected in the other wells above a PQL of 0.3 mg/L.

- *Dehalococcoides* presence was tested for groundwater samples from extraction wells EW-1 and EW-2. *Dehalococcoides* were detected in EW-2 at low levels.

- Acetic acid was detected in EW-1, MW-1 and STSW-138A at concentrations ranging from 1.8 to 3.7 mg/L. Propionic acid was only detected in STSW-138A at a concentration of 2.9 mg/L.

- BOD and COD concentrations were below PQLs of 1 and 5 mg/L respectively at all wells.

5.6.2 Pump Testing and Groundwater Modeling

The step-drawdown test of RW-1 established a linear relationship between discharge and drawdown, and therefore RW-1 was an efficient well for the discharge rates of the test. A specific capacity of 10 gallons per minute per foot of drawdown (gpm/ft) was obtained, which indicates a transmissivity of approximately 2,700 feet^2/day (ft^2/day). Driscoll (1986) states that the addition of positive head in a recharge well should not exceed one-fifth of the depth from the ground surface to the top of screen to minimize the potential for fracturing the formation and/or damaging the hydraulic conductivity of the aquifer. This distance is 28 feet in RW-1, therefore the theoretical recharge capacity of RW-1 was 280 gpm. However, based on Aerojet experience and the potential for fine-grained materials to reduce the capacity of a recharge well, a conservative estimated recharge capacity for RW-1 was assumed to be 140 gpm.

The constant-rate drawdown data were analyzed using the Cooper-Jacob straight line method and the Hantush method for leaky aquifers. The resultant transmissivity and hydraulic conductivity values are presented in **Table 5-6**. Pump test analysis is presented in Appendix B.

The site-specific information generated by the pumping tests and lithologic data from the wells were used to refine a numerical groundwater flow model previously created with Visual MODFLOW™ to simulate the pilot project flow conditions. The revised model was used to estimate optimal pumping rates for the two extraction wells and recharge for RW-1 and to estimate the capture zone of this system. Based on these analyses (as presented in Appendix B), a spacing of 600 feet was selected for the extraction wells (300 feet north and 300 feet south of RW-1). This spacing allowed flexibility in achieving adequate hydraulic capture through adjustment of flow rates as operational data were collected pertaining to well capacity, aquifer

TABLE 5-6: RESULTS OF PUMP TEST ANALYSIS

Active Perchlorate Bioremediation Demonstration

	Drawdown Test		
Well ID	Transmissivity (ft^2/day)	Hydraulic Conductivity (ft/day)	Solution
MW-1	2,600	65	Confined - Cooper-Jacob (straight line)
STSW-138A	2,900	73	Confined - Cooper-Jacob (straight line)

hydraulic parameters, and bromide tracer recovery. Simulations of particle tracking indicated this configuration would create a nominal 800-foot wide biobarrier with pumping rates as low as 20 gpm per well for an extraction/recharge zone transmissivity of 2,600 ft^2/day. However, the well capacities provided a safety factor in case the flow rate needed to be higher based on operations data.

The refined flow model from the pre-test analysis was calibrated to water levels measured during the constant-rate pumping test and the tracer test. The model layers included an aquitard above and below the pumped aquifer and included simulated leakage through the aquitards. To minimize boundary effects, the upgradient and downgradient boundaries were changed from constant-head boundaries to general-head boundaries. The modeled drawdown matched the observed drawdown for the following input parameters:

- Hydraulic conductivity = 65 ft/day
- Aquifer thickness = 40 ft
- Aquitard vertical hydraulic conductivity = 0.0035 ft/day
- Storativity = $4x10^{-6}$

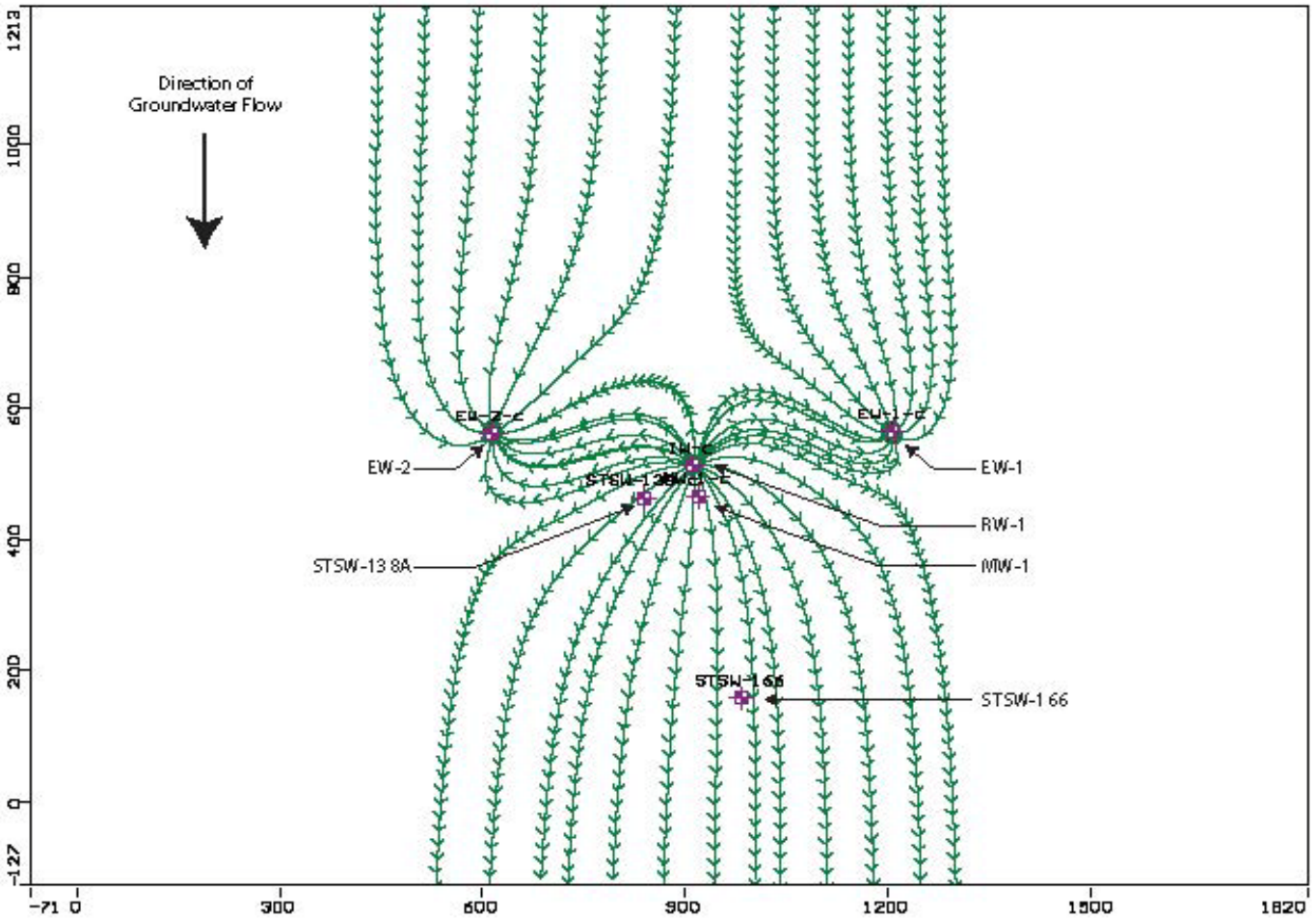
This combination of hydraulic conductivity and aquifer thickness corresponds to a transmissivity of 2,600 ft^2/day, which is comparable with the results from the analysis of specific capacity and the Cooper-Jacob method.

The design recommendations that were implemented based on the modeling included: (1) extraction well spacing of 600 feet with RW-1 located equidistant (300 feet) from EW-1 and EW-2; (2) initial extraction rates at EW-1 and EW-2 of 20 gpm and 40 gpm (respectively); and (3) initial recharge rate at RW-1 of 60 gpm. The extraction rate at EW-2 was higher than at EW-1 because the aquifer is thicker at EW-2 than at EW-1. An illustration of this scenario created by the numerical model is presented in **Figure 5-1**.

5.6.3 Tracer Testing

Figure 5-2 shows the results of the bromide tracer test of demonstration test area hydraulics (data are in **Table 5-7**). Maximum breakthrough concentrations at MW-1 occurred on 11 September 2003 (Day 24 of the tracer test), with a concentration of 24 mg/L. This maximum breakthrough concentration was 96% of the 25 mg/L time-weighted average injection concentration. The average travel time for groundwater from RW-1 to MW-1 was approximately 16 days.

Breakthrough at the transgradient monitoring well STSW-138A reached a maximum concentration of 17 mg/L by 22 September 2003 (Day 35 of the tracer test). This breakthrough



Scale in feet

Distance between arrowheads represents 1 month groundwater travel time

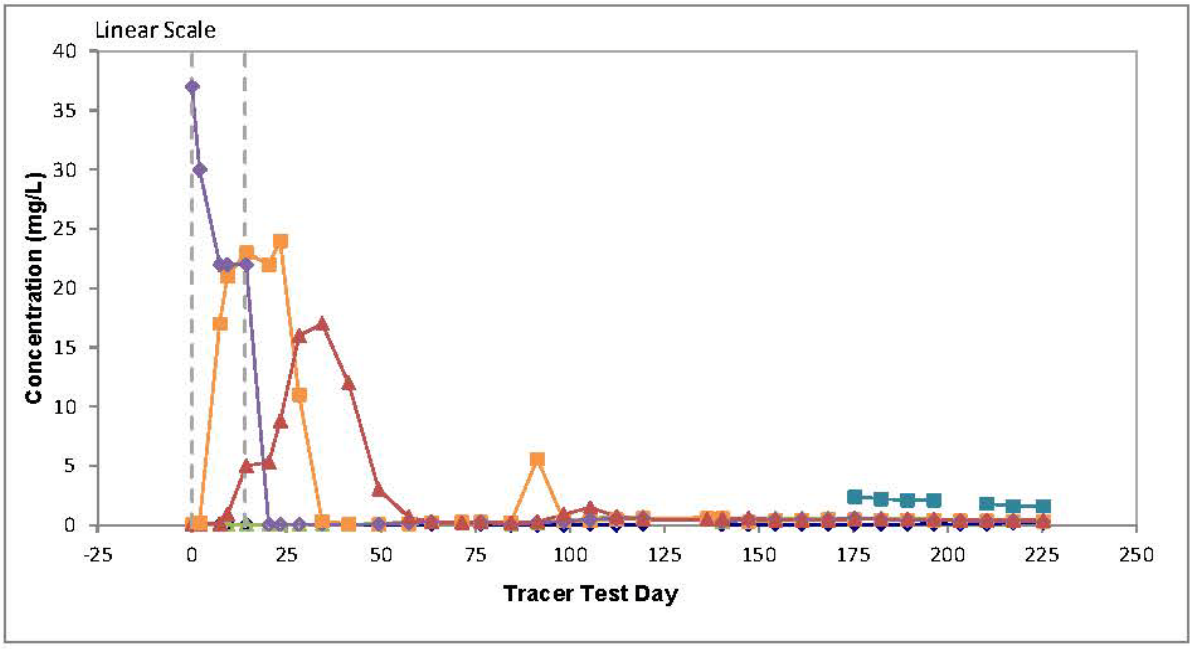
Numerical Model Simulation of Groundwater Capture and Injection

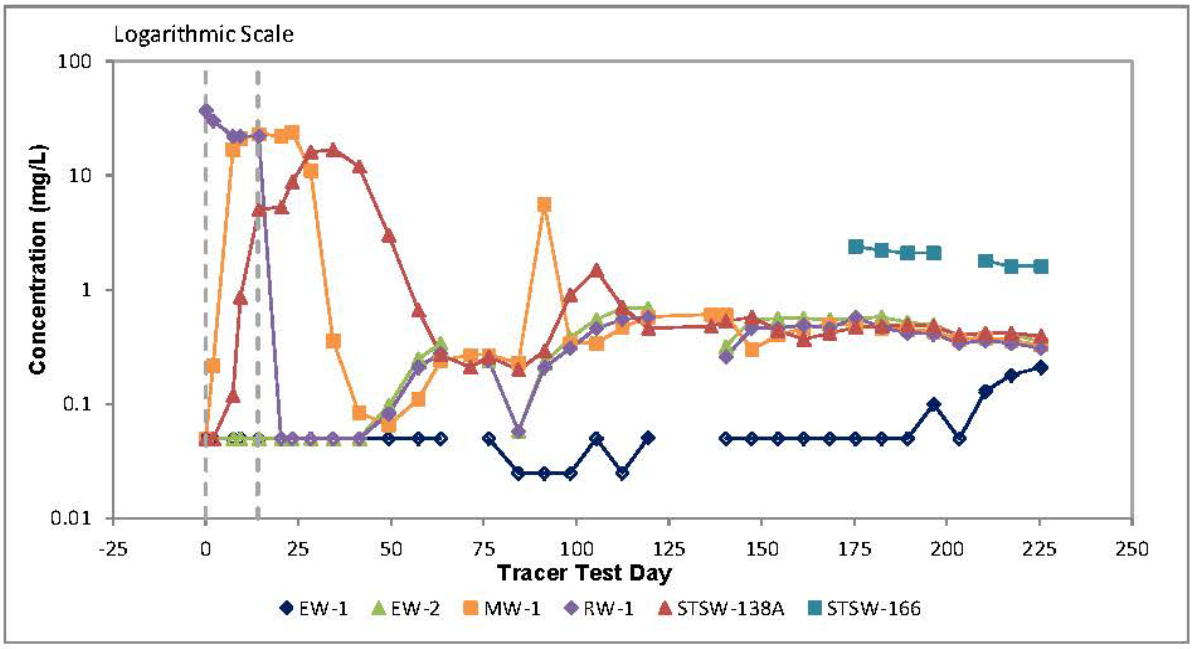
Active Perchlorate Bioremediation Demonstration

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Figure **5-1**





Open symbols represent non-detect values (plotted at the detection limit)

Note: Day "0" = 19-Aug-03

Bromide Tracer Testing Results
Active Perchlorate Bioremediation Demonstration

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Figure 5-2

TABLE 5-7: TRACER TEST RESULTS

Active Perchlorate Bioremediation Demonstration

Date Sampled	Tracer Injection	Day from Start of Tracer Injection	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166
19-Aug-03	Start	0	<0.05	<0.05	<0.05	**37**	<0.05	N/A
21-Aug-03		2	<0.05	<0.05	**0.22**	**30**	<0.05	N/A
26-Aug-03		7	<0.05	<0.05	**17**	**22**	**0.12**	N/A
28-Aug-03		9	<0.05	<0.05	**21**	**22**	**0.87**	N/A
2-Sep-03	End	14	<0.05	<0.05	**23**	**22**	**5.0**	N/A
8-Sep-03		20	<0.05	<0.05	**22**	<0.05	**5.3**	N/A
11-Sep-03		23	<0.05	<0.05	**24**	<0.05	**8.8**	N/A
16-Sep-03		28	<0.05	<0.05	**11**	<0.05	**16**	N/A
22-Sep-03		34	<0.05	<0.05	**0.36**	<0.05	**17**	N/A
29-Sep-03		41	<0.05	<0.05	**0.084**	<0.05	**12**	N/A
7-Oct-03		49	<0.05	**0.097**	**0.066**	**0.083**	**3.0**	N/A
15-Oct-03		57	<0.05	**0.25**	**0.11**	**0.21**	**0.66**	N/A
21-Oct-03		63	<0.05	**0.34**	**0.24**	**0.28**	**0.27**	N/A
29-Oct-03		71	N/A	N/A	**0.27**	N/A	**0.21**	N/A
3-Nov-03		76	<0.05	**0.24**	**0.27**	**0.24**	**0.26**	N/A
11-Nov-03		84	<0.025	**0.058**	**0.23**	**0.058**	**0.20**	N/A
18-Nov-03		91	<0.025	**0.23**	**5.6**	**0.21**	**0.29**	N/A
25-Nov-03		98	<0.025	**0.38**	**0.34**	**0.31**	**0.9**	N/A
2-Dec-03		105	<0.05	**0.55**	**0.34**	**0.46**	**1.5**	N/A
9-Dec-03		112	<0.025	**0.69**	**0.47**	**0.55**	**0.71**	N/A
16-Dec-03		119	**0.051**	**0.69**	**0.58**	**0.58**	**0.46**	N/A
2-Jan-04		136	N/A	N/A	**0.61**	N/A	**0.48**	N/A
6-Jan-04		140	<0.05	**0.32**	**0.60**	**0.26**	**0.53**	N/A
13-Jan-04		147	<0.05	**0.55**	**0.30**	**0.46**	**0.58**	N/A
20-Jan-04		154	<0.05	**0.56**	**0.40**	**0.46**	**0.44**	N/A
27-Jan-04		161	<0.05	**0.56**	**0.46**	**0.49**	**0.37**	N/A
3-Feb-04		168	<0.05	**0.55**	**0.50**	**0.46**	**0.42**	N/A
10-Feb-04		175	<0.05	**0.56**	**0.49**	**0.57**	**0.47**	**2.4**
17-Feb-04		182	<0.05	**0.58**	**0.46**	**0.47**	**0.48**	**2.2**
24-Feb-04		189	<0.05	**0.52**	**0.45**	**0.42**	**0.49**	**2.1**
2-Mar-04		196	**0.10**	**0.49**	**0.43**	**0.41**	**0.48**	**2.1**
9-Mar-04		203	<0.05	**0.40**	**0.37**	**0.34**	**0.40**	N/A
16-Mar-04		210	**0.13**	**0.42**	**0.38**	**0.36**	**0.42**	**1.8**
23-Mar-04		217	**0.18**	**0.41**	**0.36**	**0.34**	**0.42**	**1.6**
31-Mar-04		225	**0.21**	**0.35**	**0.33**	**0.31**	**0.39**	**1.6**

Notes:

< - not-detected; associated value is the reporting limit

N/A - not analyzed

All results in milligrams per litre (mg/L) as bromide

concentration constituted approximately 68% of the injection concentration of bromide. The average travel time for groundwater from RW-1 to STSW-166 was approximately 23 days.

Bromide breakthrough was observed in both extraction wells. Breakthrough at EW-1 was observed on 16 December 2003 (Day 120 of the tracer test), at a concentration of 0.05 mg/L or 0.2% of the injection concentration. Breakthrough at EW-2 was observed by 7 October (Day 50 of the tracer test), at concentrations of 0.097 to 0.690 mg/L or 0.4 to 2.8% of the injection concentration. These results provide confidence that the biobarrier was providing some capture across the full 600 foot reach of the biobarrier.

The numerical flow model was also used to simulate the transient flow field during the tracer test and was coupled with a transport model to simulate the breakthrough of bromide in the monitoring wells and extraction wells. The following input parameters resulted in a reasonable match between observed and modeled concentrations at MW-1 and STSW-138A, and extraction wells EW-1 and EW-2:

- Hydraulic gradient = 0.005
- Longitudinal dispersivity = 5 ft
- Transverse dispersivity = 0.5 ft
- Effective porosity = 0.28

5.6.4 Redox and pH Trends

Figure 5-3 presents trends in ORP and DO conditions in the test area over the duration of the demonstration test. Data are also presented in **Table 5-8**.

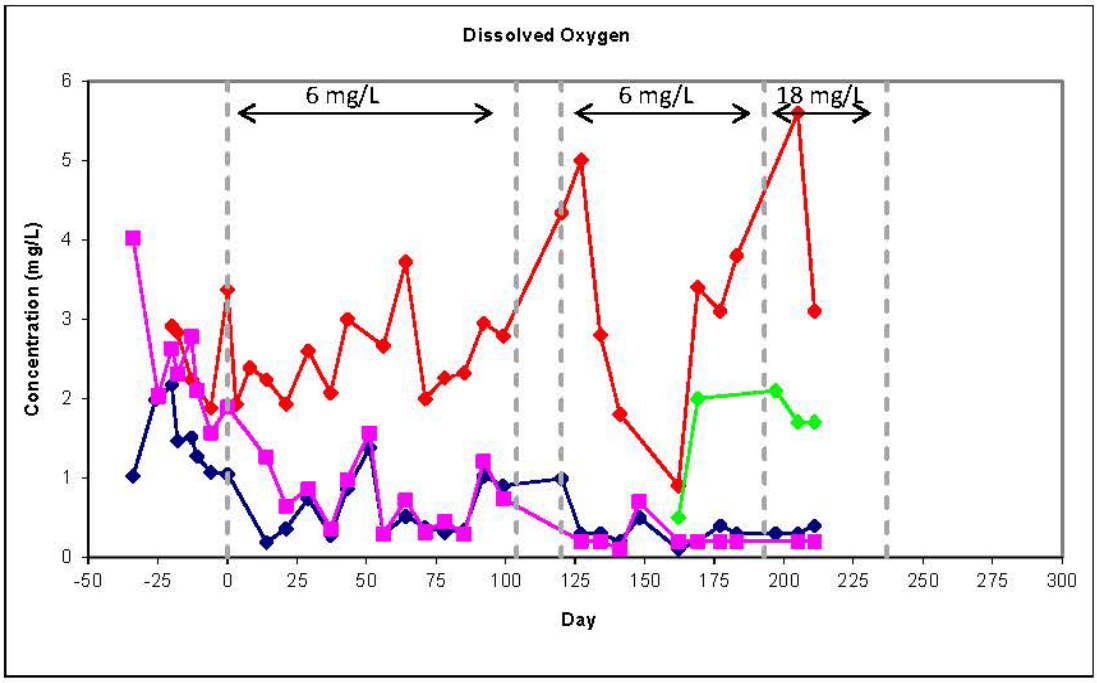
The extracted groundwater from EW-1 and EW-2 was typically aerobic and oxidizing, with median DO values of 2.9 and 2.3 mg/L, respectively, and median ORP values of 93 and 78 mV, respectively. Following addition of electron donor, the redox conditions at the monitoring wells MW-1 and STSW-138A declined, with DO typically below 1 mg/L and negative ORP.

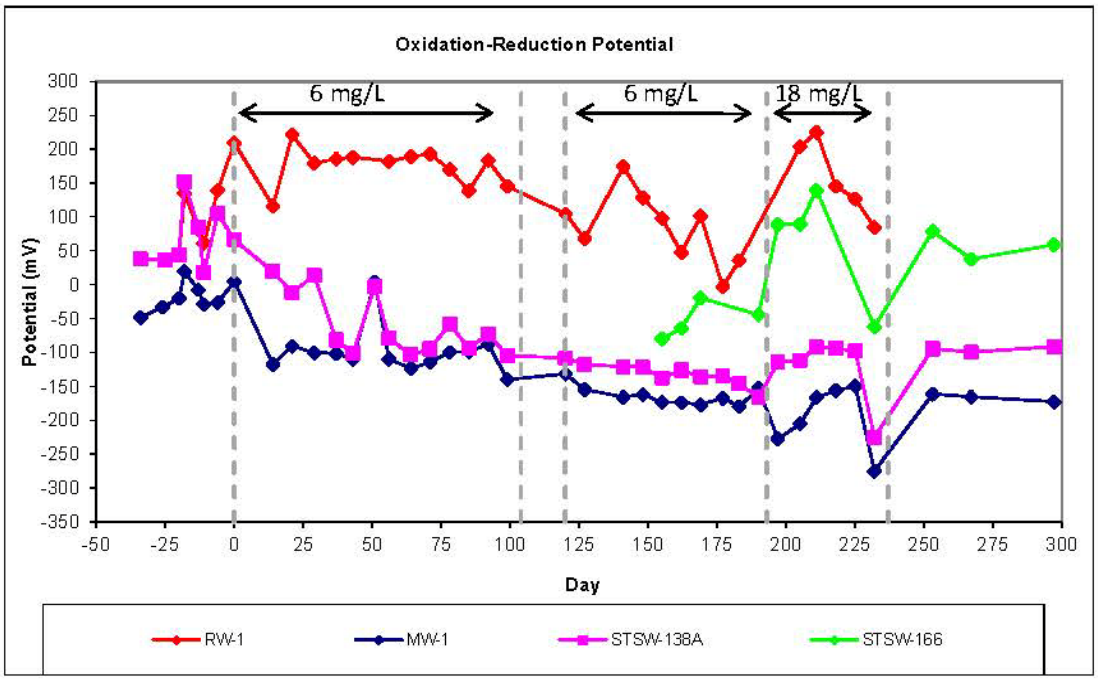
The pH of the test area groundwater generally remained stable and generally neutral throughout the pilot test (**Table 5-8**).

5.6.5 Results of Perchlorate Analysis

Figure 5-4 presents trends in perchlorate concentrations in the demonstration test area groundwater over the duration of the demonstration test. Perchlorate data are presented in **Table 5-9**.

Perchlorate concentrations were quite different in the extraction wells, including relatively low and increasing concentrations at EW-1, and much higher but declining concentrations at EW-2.





Notes:
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

Dissolved Oxygen and Oxidation-Reduction Potential Trends
Active Perchlorate Bioremediation Demonstration

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Figure 5-3

TABLE 5-8: FIELD PARAMETER MEASUREMENTS

Active Perchlorate Bioremediation Demonstration

Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Depth to Groundwater (feet below top of casing)										
04-Aug-03	-35			129		129		124	129	134
13-Aug-03	-26			129						
14-Aug-03	-25					129				
19-Aug-03	-20	126	128	129	123	129				
21-Aug-03	-18			129		129				
26-Aug-03	-13	126	128	129	122	129				
28-Aug-03	-11	126	128	129	122	129				
02-Sep-03	-6	126	128	129	122	129				
08-Sep-03	0	126	126	130	130	130				
11-Sep-03	3	126	128	129	122	129				
16-Sep-03	8	127	128	129	121	129				
22-Sep-03	14	127	128	129	121	129				
29-Sep-03	21	127	128	129	120	129				
07-Oct-03	29	127	128	129	120	129				
15-Oct-03	37	127	128	129	120	129				
21-Oct-03	43	127	128	129	119	129				
29-Oct-03	51			130		130				
03-Nov-03	56	127	129	129	119	129				
11-Nov-03	64	127	128	130	120	130				
18-Nov-03	71	126	128	129	119	129				
25-Nov-03	78	126	127	128	118	128				
02-Dec-03	85	126	127	128	117	128				
09-Dec-03	92	125	127	128	116	128				
16-Dec-03	99	126	127	128	116	128				
06-Jan-04	120	125	126	127	116	127				
13-Jan-04	127	125	127	127	115	127				
20-Jan-04	134	125	126	127	114	127				
27-Jan-04	141	125	126	127	116	127				
03-Feb-04	148	124	126	126	115	127				
10-Feb-04	155	125	126	127	115	127	117			
17-Feb-04	162	124	126	127	115	127	117			
24-Feb-04	169	124	125	126	109	127	117			
03-Mar-04	177	124	125	126	108	126				
09-Mar-04	183	124	125	126	107	127				
16-Mar-04	190	125	125	126	103	127	117			
23-Mar-04	197	123	124	126	127	127	117			
31-Mar-04	205	125	126	127	102	127	117			
06-Apr-04	211	125	126	127	101	127	118			
13-Apr-04	218	126	126	127	98.8	127	118			
20-Apr-04	225	126	126	127	97.5	127				
27-Apr-04	232	126	126	127	95.0	127	118	123	128	130

TABLE 5-8: FIELD PARAMETER MEASUREMENTS

Active Perchlorate Bioremediation Demonstration

Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Dissolved Oxygen (milligrams per litre)										
04-Aug-03	-35								1.39	2.39
05-Aug-03	-34			1.02		4.02		1.25		
13-Aug-03	-26			1.98						
14-Aug-03	-25	4.45	3.38			2.03				
19-Aug-03	-20	2.6	2.85	2.17	2.91	2.63				
21-Aug-03	-18	2.31	2.65	1.47	2.83	2.31				
26-Aug-03	-13	2.15	2.35	1.51	2.24	2.78				
28-Aug-03	-11	1.96	2.42	1.27	2.14	2.10				
02-Sep-03	-6	1.91	1.91	1.07	1.88	1.57				
08-Sep-03	0	2.62	3.07	1.05	3.37	1.89				
11-Sep-03	3	2.37	1.95		1.93					
16-Sep-03	8	3.39	2.08		2.39					
22-Sep-03	14	2.29	2.35	0.19	2.24	1.26				
29-Sep-03	21	2.04	1.84	0.36	1.93	0.65				
07-Oct-03	29	2.94	2.76	0.74	2.60	0.86				
15-Oct-03	37	2.27	2.19	0.28	2.07	0.36				
21-Oct-03	43	4.55	3.84	0.86	3.00	0.98				
29-Oct-03	51			1.38		1.57				
03-Nov-03	56	2.44	2.22	0.29	2.66	0.29				
11-Nov-03	64	3.36	3.42	0.52	3.72	0.72				
18-Nov-03	71	2.42	1.86	0.38	2	0.32				
25-Nov-03	78	2.62	2.13	0.32	2.26	0.45				
02-Dec-03	85	2.65	2.18	0.34	2.32	0.29				
09-Dec-03	92	3.52	2.92	1.02	2.95	1.21				
16-Dec-03	99	2.90	2.52	0.90	2.79	0.74				
06-Jan-04	120			0.99	4.34					
13-Jan-04	127	2.30	2.30	0.30	5.00	0.20				
20-Jan-04	134	2.30	2.10	0.30	2.80	0.20				
27-Jan-04	141	2.10	1.70	0.20	1.80	0.10				
03-Feb-04	148	4.90	3.40	0.50		0.70				
10-Feb-04	155		0.70							
17-Feb-04	162	0.80	0.70	0.10	0.90	0.20	0.50			
24-Feb-04	169	3.40	2.50	0.20	3.40	0.20	2.00			
03-Mar-04	177	3.70	3.10	0.40	3.10	0.20				
09-Mar-04	183	3.40	2.30	0.30	3.80	0.20				
23-Mar-04	197	3.10	2.50	0.30			2.10			
31-Mar-04	205	3.70	2.70	0.30	5.60	0.20	1.70			
06-Apr-04	211	4.20	2.80	0.40	3.10	0.20	1.70			

TABLE 5-8: FIELD PARAMETER MEASUREMENTS

Active Perchlorate Bioremediation Demonstration

Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Oxidation-Reduction Potential (millivolts)										
04-Aug-03	-35								-10	-44
05-Aug-03	-34			-48		38		-128		
13-Aug-03	-26			-33						
14-Aug-03	-25	133	74			37				
19-Aug-03	-20	20	63	-20	45	44				
21-Aug-03	-18	141	152	20	134	153				
26-Aug-03	-13	106	105	-7	82	85				
28-Aug-03	-11	52	127	-29	61	19				
02-Sep-03	-6	203	170	-26	139	105				
08-Sep-03	0	187	214	5	209	66				
11-Sep-03	3									
16-Sep-03	8									
22-Sep-03	14	91	78	-118	116	20				
29-Sep-03	21	173	174	-91	221	-11				
07-Oct-03	29	94	91	-100	180	14				
15-Oct-03	37	85	101	-101	186	-81				
21-Oct-03	43	133	169	-110	188	-101				
29-Oct-03	51			5		-3				
03-Nov-03	56	111	57	-109	183	-79				
11-Nov-03	64	76	77	-124	189	-103				
18-Nov-03	71	51	47	-114	193	-94				
25-Nov-03	78	52	86	-100	170	-58				
02-Dec-03	85	25	53	-98	139	-94				
09-Dec-03	92	-44	-176	-88	184	-72				
16-Dec-03	99	19	10	-140	146	-105				
06-Jan-04	120	96	117	-132	105	-108				
13-Jan-04	127	179	152	-155	68	-118				
27-Jan-04	141	32	47	-166	174	-121				
03-Feb-04	148	23	46	-162	128	-122				
10-Feb-04	155	87	93	-173	98	-137	-80			
17-Feb-04	162	57	69	-174	48	-126	-64			
24-Feb-04	169	12	38	-177	102	-135	-20			
03-Mar-04	177	60	87	-167	-2	-135				
09-Mar-04	183	-40	7	-180	36	-146				
16-Mar-04	190	125	1	-153		-166	-44			
23-Mar-04	197	152	155	-228		-114	88			
31-Mar-04	205	96	77	-205	204	-111	90			
06-Apr-04	211	137	122	-167	225	-92	140			
13-Apr-04	218	105	89	-156	146	-93				
20-Apr-04	225	120	87	-150	127	-98				
27-Apr-04	232	139	97	-275	85	-225	-62	-231	-124	-98
18-May-04	253			-161		-94	79			
01-Jun-04	267			-166		-100	38			
01-Jul-04	297			-172		-91	59			

TABLE 5-8: FIELD PARAMETER MEASUREMENTS

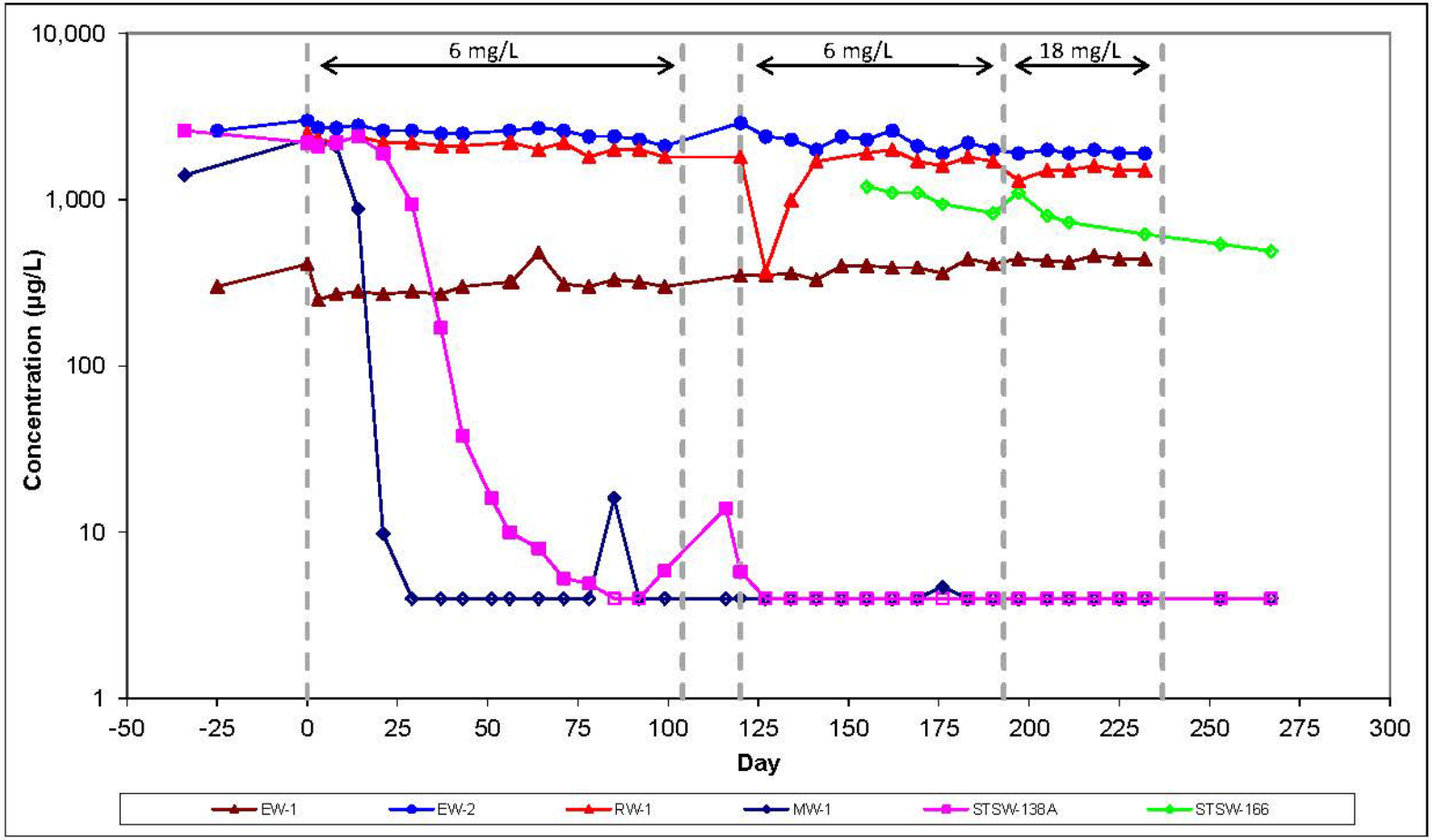
Active Perchlorate Bioremediation Demonstration

Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
pH (pH units)										
04-Aug-03	-35								6.90	7.31
05-Aug-03	-34			6.67		6.74		7.61		
13-Aug-03	-26			6.16						
14-Aug-03	-25	7.42	7.30			7.29				
19-Aug-03	-20	7.34	6.92	6.75	7.00	6.62				
21-Aug-03	-18	7.26	7.27	7.44	7.79	7.78				
26-Aug-03	-13	7.11	7.03	6.77	6.91	6.80				
28-Aug-03	-11	6.89	6.80	6.89	7.09	6.90				
02-Sep-03	-6	6.87	7.25	7.20	6.88	6.90				
08-Sep-03	0	7.54	7.50	6.93	7.29	7.18				
11-Sep-03	3			7.26		7.36				
16-Sep-03	8			7.17		7.22				
22-Sep-03	14	7.09	7.06	6.80	6.55	6.54				
29-Sep-03	21	7.29	7.36	7.02	6.95	6.81				
07-Oct-03	29	7.15	7.25	6.96	6.81	7.60				
15-Oct-03	37	7.20	7.31	6.95	7.16	6.81				
21-Oct-03	43	7.37	7.49	7.10	7.15	7.01				
29-Oct-03	51			8.69		8.59				
03-Nov-03	56	7.55	7.47	7.39	7.10	6.84				
11-Nov-03	64	7.00	6.86	7.31	7.16	6.82				
18-Nov-03	71	7.36	7.21	7.10	7.21	7.11				
25-Nov-03	78	6.95	7.02	7.05	6.75	7.20				
02-Dec-03	85	7.42	7.44	7.43	7.34	7.36				
09-Dec-03	92	7.14	7.14	7.23	7.30	7.05				
16-Dec-03	99	7.42	7.25	7.38	7.53	7.28				
06-Jan-04	120	7.45	7.35	7.63	7.33	7.40				
13-Jan-04	127	7.44	7.35	7.64	7.31	7.38				
20-Jan-04	134			7.95	7.02	7.44				
27-Jan-04	141	7.43	7.30	7.67	7.29	7.39				
03-Feb-04	148	7.36	6.62	6.62	7.16	7.57				
10-Feb-04	155	7.42	7.38	7.70	7.28	7.39	7.28			
17-Feb-04	162	7.41	7.29	7.69	7.29	7.31	7.35			
24-Feb-04	169	7.40	7.26	7.71	7.28	7.36	7.25			
03-Mar-04	177	7.36	7.25	7.66	7.29	7.34				
09-Mar-04	183	7.47	7.30	7.69	7.25	7.36				
16-Mar-04	190	7.30	7.28	7.60		7.30	7.25			
23-Mar-04	197	7.24	7.14	7.66		7.23	7.14			
31-Mar-04	205	7.35	7.25	7.74	7.23	7.33	7.23			
06-Apr-04	211	6.51	6.35	6.91	6.47	6.42	6.33			
13-Apr-04	218	6.18	6.03	6.59	6.19	6.08				
20-Apr-04	225	6.90	6.76	7.31	6.75	6.78				
27-Apr-04	232	7.39	7.26	8.32	7.37	7.67	7.25	8.15	7.94	7.66

TABLE 5-8: FIELD PARAMETER MEASUREMENTS

Active Perchlorate Bioremediation Demonstration

Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Teperature (degrees F)										
04-Aug-03	-35								68.4	70.7
05-Aug-03	-34			68.2		66.9		66.6		
13-Aug-03	-26			70.5						
14-Aug-03	-25	67.3	65.5			66.9				
19-Aug-03	-20	67.5	67.1	70.2	69.1	69.3				
21-Aug-03	-18	68.5	65.7	75.4	66.7	74.5				
26-Aug-03	-13	68.5	66.7	70.0	66.9	70.0				
28-Aug-03	-11	68.2	66.6	69.6	67.1	68.7				
02-Sep-03	-6	69.3	67.1	71.4	66.9	70.9				
08-Sep-03	0	69.1	66.6	70.2	69.1	69.1				
11-Sep-03	3	68.5	66.9	71.4	66.9	70.7				
16-Sep-03	8	69.1	66.4	68.7	66.0	67.8				
22-Sep-03	14	69.3	67.1	70.0	66.7	69.3				
29-Sep-03	21	69.6	68.9	70.0	65.8	67.5				
07-Oct-03	29	68.5	66.0	68.7	66.2	67.3				
15-Oct-03	37	68.5	66.0	69.4	66.0	68.0				
21-Oct-03	43	69.4	67.3	70.5	67.8	68.9				
29-Oct-03	51			69.6		69.1				
03-Nov-03	56	67.6	65.7	67.6		66.7				
11-Nov-03	64	68.0	66.4	69.3	65.1	68.0				
18-Nov-03	71	68.2	65.5	67.1	64.8	66.9				
25-Nov-03	78	67.6	65.7	66.7	64.4	66.9				
02-Dec-03	85	68.0	65.7	68.0	65.7	68.2				
09-Dec-03	92	65.8	63.9	66.0	64.9	66.2				
16-Dec-03	99	66.7	65.1	68.4	64.4	67.3				
06-Jan-04	120			65.7	63.7	65.3				
13-Jan-04	127	65.8	64.4	65.3	62.8	65.7				
20-Jan-04	134	66.0	64.2	65.7	64.2	65.8				
27-Jan-04	141	63.7	63.3	64.0	63.3	63.9				
03-Feb-04	148	65.8	63.7	63.9		63.7				
10-Feb-04	155	68.7	66.7	64.4	65.8	67.3	67.6			
17-Feb-04	162	65.8	64.9	65.5	65.3	66.4	64.6			
24-Feb-04	169	68.4	65.3	66.4	65.5	66.4	67.1			
03-Mar-04	177	67.8	65.3	65.1	65.3	66.2				
09-Mar-04	183	69.6	73.4	67.5	69.3	68.7				
16-Mar-04	190			69.4		69.3	69.1			
23-Mar-04	197	68.7	66.0	66.0		68.0	68.0			
31-Mar-04	205	67.5	65.8	67.3	66.9	67.8	67.8			
06-Apr-04	211	68.2	66.4	66.0	64.8	66.7	67.5			
13-Apr-04	218			67.5	65.3	67.8				
20-Apr-04	225			66.2		66.2				
27-Apr-04	232			70.0		70.0	67.6	67.6	66.7	67.1



Notes:
Open symbols represent non-detects
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

Perchlorate Biodegradation Results
Active Perchlorate Bioremediation Demonstration

Geosyntec consultants

Figure **5-4**

Guelph | December 2012

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Electron Acceptors											
Chlorate (mg/L)	04-Aug-03	-35								<0.02	<0.02
	05-Aug-03	-34			0.32		<0.02		0.01		
	14-Aug-03	-25	0.021	0.02							
	08-Sep-03	0	0.021	0.02	<0.02	<0.02	0.045				
	29-Sep-03	21	<0.02	<0.02	<0.02	<0.02	<0.02				
	29-Oct-03	51			<0.02		<0.02				
	03-Nov-03	56	<0.02	<0.02		<0.02					
	25-Nov-03	78	<0.02	<0.02	<0.02	<0.02	<0.02				
	06-Jan-04	120	<0.02	<0.02	<0.02	<0.02	<0.02				
	03-Feb-04	148	<0.02	<0.02	<0.02	<0.02	<0.02				
	02-Mar-04	176	<0.02	<0.02	<0.02	<0.02	<0.02				
	31-Mar-04	205	<0.02	<0.02	<0.02	<0.02	<0.02				
	27-Apr-04	232	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02			
Nitrate (mg/L)	04-Aug-03	-35								2.1	5.5
	05-Aug-03	-34			1.0		1.7		0.71		
	14-Aug-03	-25	1.2	1.4							
	08-Sep-03	0	1.3	1.4	1.1	1.4	1.3				
	11-Sep-03	3	1.6	1.3	1.2	1.4	1.4				
	16-Sep-03	8	1.6	1.3	0.22	1.3	1.3				
	22-Sep-03	14	1.6	1.3	<0.05	1.4	1.0				
	29-Sep-03	21	1.7	1.3	<0.05	1.4	0.58				
	07-Oct-03	29	1.7	1.4	0.12	1.4	0.1				
	15-Oct-03	37	1.6	1.2	<0.05	1.3	<0.05				
	21-Oct-03	43	1.6	1.3	<0.05	1.3	<0.05				
	29-Oct-03	51			<0.025		<0.025				
	03-Nov-03	56	1.8	1.4	<0.025	1.4	<0.025				
	11-Nov-03	64	1.3	1.5	<0.025	1.4	<0.025				
	18-Nov-03	71	1.7	1.4	<0.025	1.4	<0.025				
	25-Nov-03	78	1.7	1.3	<0.025	1.3	<0.025				
	02-Dec-03	85	1.8	1.3	<0.05	1.4	<0.05				
	09-Dec-03	92	1.8	1.3	<0.025	1.3	<0.025				
	16-Dec-03	99	1.8	1.3	<0.05	1.3	<0.05				
	02-Jan-04	116			<0.5		<0.5				
	06-Jan-04	120	1.8	1.5	<0.05	1.6	<0.05				
	13-Jan-04	127	1.9	1.4	1.6	1.5	0.22				
	20-Jan-04	134	1.8	1.2	<0.05	1.3	<0.05				
	27-Jan-04	141	1.8	1.2	<0.05	1.3	<0.05				
	03-Feb-04	148	1.8	1.2	<0.05	1.2	<0.05				
	10-Feb-04	155	1.9	1.2	<0.05	1.4	<0.05	0.96			
	17-Feb-04	162	1.8	1.3	<0.05	1.4	<0.05	0.9			
	24-Feb-04	169	1.9	1.2	<0.05	1.3	<0.05	0.83			
	02-Mar-04	176	1.9	1.2	<0.05	1.3	<0.05	0.85			
	09-Mar-04	183	1.7	1.0	<0.05	1.2	<0.05				
	16-Mar-04	190	1.8	1.1	<0.1	1.2	<0.1	0.67			
	23-Mar-04	197	1.9	1.1	<0.1	1.0	<0.1	0.83			
	31-Mar-04	205	1.8	1.1	<0.1	1.3	<0.1	0.63			
	06-Apr-04	211	1.9	1.1	<0.1	1.3	<0.1	0.61			
	13-Apr-04	218	1.8	1.1	<0.1	1.2	<0.1				
	20-Apr-04	225	1.8	1.1	<0.1	1.2	<0.1				
	27-Apr-04	232	1.7	1.0	<0.1	1.2	<0.1	0.5	0.76	1.5	5.8
	18-May-04	253			<0.1		<0.1	0.44			
	01-Jun-04	267			<0.1		<0.1	0.41			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS

Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Perchlorate (µg/L)	04-Apr-02	-522								3,900	170
	05-Apr-02	-521							<4.0		
	08-Apr-02	-518									
	02-Dec-02	-280									400
	20-Dec-02	-262					2,100		<4.0	4,200	
	31-Dec-02	-251			1,600						
	06-Jan-03	-245				1,600					
	05-May-03	-126	440	2,800							
	21-May-03	-110					2,200				
	22-May-03	-109							<4.0	4,600	410
	04-Aug-03	-35								4,300	410
	05-Aug-03	-34			1,400		2,600		<4.0		
	14-Aug-03	-25	300	2,600							
	08-Sep-03	0	410	3,000	2,300	2,500	2,200				
	11-Sep-03	3	250	2,700	2,200	2,300	2,100				
	16-Sep-03	8	270	2,700	2,100	2,200	2,200				
	22-Sep-03	14	280	2,800	880	2,400	2,400				
	29-Sep-03	21	270	2,600	9.8	2,200	1,900				
	07-Oct-03	29	280	2,600	<4.0	2,200	940				
	15-Oct-03	37	270	2,500	<4.0	2,100	170				
	21-Oct-03	43	300	2,500	<4.0	2,100	38.0				
	29-Oct-03	51			<4.0		16.0				
	03-Nov-03	56	320	2,600	<4.0	2,200	10.0				
	11-Nov-03	64	480	2,700	<4.0	2,000	8.0				
	18-Nov-03	71	310	2,600	<4.0	2,200	5.3				
	25-Nov-03	78	300	2,400	<4.0	1,800	4.9				
	02-Dec-03	85	330	2,400	16.0	2,000	<4.0				
	09-Dec-03	92	320	2,300	<4.0	2,000	<4.0				
	16-Dec-03	99	300	2,100	<4.0	1,800	5.9				
	02-Jan-04	116			<4.0		14.0				
	06-Jan-04	120	350	2,900	<4.0	1,800	5.8				
	13-Jan-04	127	350	2,400	<4.0	370	<4.0				
	20-Jan-04	134	360	2,300	<4.0	990	<4.0				
	27-Jan-04	141	330	2,000	<4.0	1,700	<4.0				
	03-Feb-04	148	400	2,400	<4.0	<4.0	<4.0				
	10-Feb-04	155	400	2,300	<4.0	1,900	<4.0	1,200			
	17-Feb-04	162	390	2,600	<4.0	2,000	<4.0	1,100			
	24-Feb-04	169	390	2,100	<4.0	1,700	<4.0	1,100			
	02-Mar-04	176	360	1,900	4.7	1,600	<4.0	940			
	09-Mar-04	183	440	2,200	<4.0	1,800	<4.0				
	16-Mar-04	190	410	2,000	<4.0	1,700	<4.0	830			
	23-Mar-04	197	440	1,900	<4.0	1,300	<4.0	1,100			
	31-Mar-04	205	430	2,000	<4.0	1,500	<4.0	800			
	06-Apr-04	211	420	1,900	<4.0	1,500	<4.0	730			
	13-Apr-04	218	460	2,000	<4.0	1,600	<4.0				
	20-Apr-04	225	440	1,900	<4.0	1,500	<4.0				
	27-Apr-04	232	440	1,900	<4.0	1,500	<4.0	620	<4.0	3,800	630
	14-May-04	249								4,000	610
	17-May-04	252							<4.0		
	18-May-04	253			<4.0		<4.0	540			
	01-Jun-04	267			<4.0		<4.0	490			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS

Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Sulfate (mg/L)	04-Aug-03	-35								11.0	18.0
	05-Aug-03	-34			9.0		9.7		9.5		
	14-Aug-03	-25	8.9	9.4							
	08-Sep-03	0	8.9	9.9	9.4	9.8	9.6				
	11-Sep-03	3	9.0	9.8	9.6	9.7	9.6				
	16-Sep-03	8	8.9	9.6	9.8	9.5	9.3				
	22-Sep-03	14	8.6	9.3	8.9	9.2	9.1				
	29-Sep-03	21	8.4	9.1	8.8	9.0	9.0				
	07-Oct-03	29	8.5	9.3	9.0	9.2	9.1				
	15-Oct-03	37	8.1	8.9	8.7	8.8	8.6				
	21-Oct-03	43	8.4	9.3	9.0	9.1	9.0				
	29-Oct-03	51			8.7		8.9				
	03-Nov-03	56	8.36	9.3	9.0	8.8	9.0				
	11-Nov-03	64	8.1	9.3	8.5	9.1	8.6				
	18-Nov-03	71	8.1	9.0	8.0	8.9	8.7				
	25-Nov-03	78	8.1	8.9	8.2	8.8	8.6				
	02-Dec-03	85	8.2	9.1	8.3	8.9	8.8				
	09-Dec-03	92	8.1	9.1	8.0	8.9	8.8				
	16-Dec-03	99	8.2	9.1	7.8	9.0	8.7				
	02-Jan-04	116			6.7		7.9				
	06-Jan-04	120	8.6	10.0	8.0	9.5	9.0				
	13-Jan-04	127	8.4	9.6	7.8	9.4	8.2				
	20-Jan-04	134	7.8	8.9	6.9	8.6	7.4				
	27-Jan-04	141	7.9	8.9	6.7	8.8	7.1				
	03-Feb-04	148	8.2	9.2	7.1	9.0	7.3				
	10-Feb-04	155	8.3	9.3	6.4	9.1	7.1	9.3			
	17-Feb-04	162	8.1	9.3	6.0	9.1	6.8	9.1			
	24-Feb-04	169	8.2	9.2	5.4	9.0	6.7	9.2			
	02-Mar-04	176	8.3	9.3	5.5	9.2	6.5	9.2			
	09-Mar-04	183	7.8	8.8	5.2	8.8	5.8				
	16-Mar-04	190	8.0	9.0	5.0	8.7	5.7	8.9			
	23-Mar-04	197	8.0	8.9	2.8	8.0	5.5	9.1			
	31-Mar-04	205	8.1	8.9	0.16	8.8	5.1	9.0			
	06-Apr-04	211	8.0	9.0	<0.1	8.7	3.8	8.9			
	13-Apr-04	218	7.2	8.0	<0.1	8.4	2.0				
	20-Apr-04	225	7.6	8.4	<0.1	8.2	0.75				
	27-Apr-04	232	7.6	8.4	<0.1	8.1	0.33	8.2	9.3	9.2	18.0
	18-May-04	253			0.82		0.24	8.1			
	01-Jun-04	267			0.69		0.26	8.0			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS

Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Ions											
Chloride (mg/L)	04-Aug-03	-35								7.7	38.0
	05-Aug-03	-34			2.6		2.4		4.1		
	14-Aug-03	-25	3.1	3.4							
	08-Sep-03	0	2.5	3.2	3.1	3.0	2.6				
	11-Sep-03	3	2.6	3.0	3.0	2.9	2.7				
	16-Sep-03	8	2.5	3.1	4.1	2.9	2.9				
	22-Sep-03	14	2.6	3.0	3.5	3.0	3.1				
	29-Sep-03	21	2.6	3.0	3.9	2.9	3.1				
	07-Oct-03	29	2.5	3.0	3.9	2.9	3.4				
	15-Oct-03	37	2.4	2.9	3.9	2.9	3.7				
	21-Oct-03	43	2.4	2.9	3.9	2.8	3.9				
	29-Oct-03	51			3.7		3.6				
	03-Nov-03	56	2.4	2.9	3.8	2.7	3.7				
	11-Nov-03	64	2.4	3.1	3.8	3.0	4.0				
	18-Nov-03	71	2.3	2.9	3.7	2.7	3.6				
	25-Nov-03	78	2.2	2.7	3.5	2.6	3.5				
	02-Dec-03	85	2.4	2.8	3.6	2.8	3.7				
	09-Dec-03	92	2.3	2.8	3.5	2.7	3.7				
	16-Dec-03	99	2.3	2.8	3.6	2.7	3.7				
	02-Jan-04	116			3.2		3.3				
	06-Jan-04	120	2.4	3.1	3.6	2.9	3.7				
	13-Jan-04	127	2.4	2.9	3.9	2.8	3.6				
	20-Jan-04	134	2.3	2.9	4.2	2.8	3.6				
	27-Jan-04	141	2.4	2.9	3.6	2.8	3.7				
	03-Feb-04	148	2.4	2.9	3.7	2.9	3.7				
	10-Feb-04	155	2.5	3.0	3.8	2.9	3.7	3.0			
	17-Feb-04	162	2.4	3.1	3.6	2.9	3.6	3.0			
	24-Feb-04	169	2.4	3.0	3.6	2.9	3.6	3.0			
	02-Mar-04	176	2.5	3.0	3.7	2.9	3.7	3.1			
	09-Mar-04	183	2.5	3.1	4.1	3.0	4.1				
	16-Mar-04	190	2.4	2.9	3.5	2.9	3.5	3.1			
	23-Mar-04	197	2.4	2.9	3.3	2.8	3.4	2.9			
	31-Mar-04	205	2.4	2.9	3.6	2.8	3.5	3.1			
	06-Apr-04	211	2.4	3.0	3.4	2.7	3.5	3.0			
	13-Apr-04	218	2.2	2.5	3.5	2.5	3.5				
	20-Apr-04	225	2.3	2.8	3.3	2.7	3.4				
	27-Apr-04	232	2.4	2.9	3.3	2.7	3.4	3.0	3.9	4.5	43.0
	18-May-04	253			3.5		3.6	3.3			
	01-Jun-04	267			3.5		3.7	3.3			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Organic Acids											
Acetic Acid (mg/L)	13-Aug-03	-26			**3.7**						
	14-Aug-03	-25	**1.8**	<1.0			**2.9**				
	08-Sep-03	0	**1.5**	**1.5**	**1.5**	**1.7**	**1.6**				
	11-Sep-03	3	**1.5**	**1.5**	**1.2**	**1.5**	**1.5**				
	16-Sep-03	8	**1.5**	**2.0**	**2.1**	**1.6**	**2.1**				
	29-Sep-03	21	**1.1**	**1.3**	**1.6**	**1.8**	**1.4**				
	15-Oct-03	37	**1.2**	**1.2**	**1.1**	**1.6**	**1.3**				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	**1.2**	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	**1.2**	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	**1.7**	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	**1.2**	<1.0	<1.0				
	02-Mar-04	176	**2.0**	**2.5**	**1.7**	**1.9**	**2.1**				
	31-Mar-04	205	<1.0	<1.0	**13.0**	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	**13.0**	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Butyric Acid (mg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			<1.0				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	<1.0	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	<1.0	<1.0	<1.0				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	<1.0				
	31-Mar-04	205	<1.0	<1.0	<1.0	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	<1.0	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Lactic Acid (mg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			<1.0				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	<1.0	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	<1.0	<1.0	<1.0				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	<1.0				
	31-Mar-04	205	<1.0	<1.0	<1.0	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	<1.0	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	**15.0**	<1.0	<1.0	<1.0			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS

Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Propionic Acid (mg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			**2.9**				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	<1.0	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	<1.0	<1.0	<1.0				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	<1.0				
	31-Mar-04	205	<1.0	<1.0	**4.2**	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	**5.3**	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	**5.9**	<1.0	<1.0	<1.0			
Pyruvic Acid (mg/L)	13-Aug-03	-26			<0.5						
	14-Aug-03	-25	<0.5	<0.5			<0.5				
	08-Sep-03	0	<0.5	<0.5	<0.5	<0.5	<0.5				
	11-Sep-03	3	<0.5	<0.5	<0.5	<0.5	<0.5				
	16-Sep-03	8	<0.5	<0.5	<0.5	<0.5	<0.5				
	29-Sep-03	21	<0.5	<0.5	<0.5	<0.5	<0.5				
	15-Oct-03	37	<0.5	<0.5	<0.5	<0.5	<0.5				
	29-Oct-03	51			<0.5		<0.5				
	03-Nov-03	56	<0.5	<0.5		<0.5					
	11-Nov-03	64	<0.5	<0.5	<0.5	<0.5	<0.5				
	25-Nov-03	78	<0.5	<0.5	<0.5	<0.5	<0.5				
	09-Dec-03	92	<0.5	<0.5	<0.5	<0.5	<0.5				
	06-Jan-04	120	<0.5	<0.5	<0.5	<0.5	<0.5				
	20-Jan-04	134	<0.5	<0.5	<0.5	<0.5	<0.5				
	03-Feb-04	148	<0.5	<0.5	**0.72**	<0.5	<0.5				
	10-Feb-04	155						<0.5			
	17-Feb-04	162	<0.5	<0.5	<0.5	<0.5	<0.5				
	02-Mar-04	176	<0.5	<0.5	<0.5	<0.5	<0.5				
	31-Mar-04	205	<0.5	<0.5	<0.5	<0.5	<0.5				
	13-Apr-04	218	<0.5	<0.5	<0.5	<0.5	<0.5				
	27-Apr-04	232	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Volatile Organic Compounds											
cis/trans1,2-Dichloroethene (µg/L)	21-Oct-03	43					<0.5				
	29-Oct-03	51			<0.5		<0.5				
	03-Nov-03	56	<0.5	<0.5		<0.5					
	05-Nov-03	58			<0.5						
	11-Nov-03	64	<0.5	<0.5	<0.5	<0.5	<0.5				
	25-Nov-03	78	<0.5	<0.5	<0.5	<0.5	<0.5				
	09-Dec-03	92	<0.5	<0.5	<0.5	<0.5	<0.5				
	02-Jan-04	116			<0.5		<0.5				
	06-Jan-04	120	<0.5	<0.5	<0.5	<0.5	<0.5				
	20-Jan-04	134	<0.5	<0.5	<0.5	<0.5	<0.5				
	03-Feb-04	148	<0.5	<0.5	<0.5	<0.5	<0.5				
	10-Feb-04	155						<0.5			
	17-Feb-04	162	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	24-Feb-04	169						<0.5			
	02-Mar-04	176	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	16-Mar-04	190	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	31-Mar-04	205	<0.5	<0.5	1.7	<0.5	<0.5	<0.5			
	13-Apr-04	218	<0.5	<0.5	1.5	<0.5	<0.5				
	27-Apr-04	232	<0.5	<0.5	4.5	<0.5	<0.5	<0.5			
Trichloroethene (µg/L)	04-Apr-02	-522								12.0	1.9
	05-Apr-02	-521							16.0		
	08-Apr-02	-518									
	02-Dec-02	-280									2.3
	20-Dec-02	-262					<0.5		22.0	16.0	
	31-Dec-02	-251			<0.5						
	06-Jan-03	-245				<0.5					
	05-May-03	-126	<0.5	2.5							
	21-May-03	-110					0.54				
	22-May-03	-109							23.0	17.0	2.0
	05-Aug-03	-34			<0.5		<0.5				
	14-Aug-03	-25	<0.5	6.7							
	08-Sep-03	0	<0.5	4.8	3.3	3.8	0.74				
	11-Sep-03	3	<0.5	5.1	3.6	3.8	1.2				
	16-Sep-03	8	<0.5	4.8	3.9	5.8	2.1				
	29-Sep-03	21	<0.5	4.3	3.2	3.5	3.2				
	15-Oct-03	37	<0.5	4.6	3.2	4.0	3.3				
	21-Oct-03	43			3.0		2.8				
	29-Oct-03	51			3.3		3.2				
	03-Nov-03	56	<0.5	5.1		3.9					
	05-Nov-03	58			3.5						
	11-Nov-03	64	<0.5	5.2	3.6	4.4	3.1				
	25-Nov-03	78	<0.5	5.3	4.2	4.7	3.7				
	09-Dec-03	92	<0.5	5.8	4.2	4.7	3.9				
	02-Jan-04	116			4.1		4.0				
	06-Jan-04	120	<0.5	7.6	3.7	5.8	3.0				
	20-Jan-04	134	<0.5	7.1	5.1	5.4	4.0				
	03-Feb-04	148	<0.5	7.3	5.1	5.6	4.2				
	10-Feb-04	155						0.74			
	17-Feb-04	162	<0.5	8.2	4.7	6.2	4.2	0.64			
	24-Feb-04	169						1.5			
	02-Mar-04	176	<0.5	8.2	6.2	5.9	5.2	1.1			
	16-Mar-04	190	<0.5	8.2	5.3	6.2	4.7	1.2			
	31-Mar-04	205	<0.5	8.8	1.5	5.9	5.1	1.3			
	13-Apr-04	218	<0.5	8.9	2.8	6.3	5.5				
	27-Apr-04	232	<0.5	9.0	3.3	6.3	4.9	1.7			
	14-May-04	249								17.0	1.6
	17-May-04	252							27.0		
	18-May-04	253			1.1		3.5	1.8			
	01-Jun-04	267			1.6		4.9	2.4			
	01-Jul-04	297			2.2		4.7	2.8			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Vinyl chloride (µg/L)	21-Oct-03	43					<0.5				
	29-Oct-03	51			<0.25		<0.25				
	03-Nov-03	56	<0.5	<0.25		<0.25					
	05-Nov-03	58			<0.5						
	11-Nov-03	64	<0.25	<0.25	<0.25	<0.25	<0.25				
	25-Nov-03	78	<0.25	<0.25	<0.25	<0.25	<0.25				
	09-Dec-03	92	<0.25	<0.25	<0.25	<0.25	<0.25				
	02-Jan-04	116			<0.25		<0.25				
	06-Jan-04	120	<0.25	<0.25	<0.25	<0.25	<0.25				
	20-Jan-04	134	<0.25	<0.25	<0.25	<0.25	<0.25				
	03-Feb-04	148	<0.25	<0.25	<0.25	<0.25	<0.25				
	10-Feb-04	155						<0.25			
	17-Feb-04	162	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25			
	24-Feb-04	169						<0.25			
	02-Mar-04	176	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25			
	16-Mar-04	190	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	31-Mar-04	205	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	13-Apr-04	218	<0.5	<0.5	<0.5	<0.5	<0.5				
	27-Apr-04	232	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	14-May-04	249								<0.5	<0.5
	17-May-04	252							<0.5		
	18-May-04	253			<0.5		<0.5	<0.5			
	01-Jun-04	267			<0.5		<0.5	<0.5			
	01-Jul-04	297			<0.5		<0.5	<0.5			
Bioremediation Parameters											
Biochemical Oxygen Demand (mg/L)	04-Aug-03	-35								<1.0	<1.0
	05-Aug-03	-34			<1.0		<1.0		<1.0		
	14-Aug-03	-25	<1.0	<1.0							
	27-Apr-04	232	<1.0	<1.0	**14.0**	<1.0		<1.0	<1.0	<1.0	<1.0
Chemical Oxygen Demand (mg/L)	04-Aug-03	-35								<5.0	<5.0
	05-Aug-03	-34			<5.0		<5.0		<5.0		
	14-Aug-03	-25	<5.0	<5.0							
	27-Apr-04	232	**10.0**	**5.1**	**26.0**	**5.1**	**10.0**	**7.7**	<5.0	**15.0**	**13.0**
Dehalococcoides presence (Scale)	14-Aug-03	-25	ND	**3.0**							
	27-Nov-03	80			**2.0**	ND					
	16-Dec-03	99			ND	ND	ND				
	10-Feb-04	155						ND			
	23-Mar-04	197			ND						
	27-Apr-04	232	ND	ND	**2.0**		ND				
Ethanol (mg/L)	13-Aug-03	-26			<0.1						
	14-Aug-03	-25	<0.1	<0.1			<0.1				
	08-Sep-03	0	<0.1	<0.1	<0.1	**260**	<0.1				
	11-Sep-03	3	<0.1	<0.1	<0.1	**260**	<0.1				
	16-Sep-03	8	<0.1	<0.1	<0.1	**260**	<0.1				
	29-Sep-03	21	<0.1	<0.1	<0.1	**260**	<0.1				
	15-Oct-03	37	<0.1	<0.1	<0.1	**280**	<0.1				
	29-Oct-03	51			<0.1		<0.1				
	03-Nov-03	56	<0.1	<0.1		**0.54**					
	11-Nov-03	64	<0.1	<0.1	<0.1	**230**	<0.1				
	25-Nov-03	78	<0.1	<0.1	<0.1	**280**	<0.1				
	09-Dec-03	92	<0.1	<0.1	<0.1	<0.1	<0.1				
	06-Jan-04	120	<0.1	<0.1	<0.1	**290**	<0.1				
	20-Jan-04	134	<0.1	<0.1	<0.1	**260**	<0.1				
	03-Feb-04	148	<0.1	<0.1	<0.1	**250**	<0.1				
	17-Feb-04	162	<0.1	<0.1	<0.1	**250**	<0.1				
	02-Mar-04	176	<0.1	<0.1	<0.1	**10.0**	<0.1	<0.1			
	16-Mar-04	190	<0.1	<0.1	<0.1	**270**	<0.1	<0.1			
	31-Mar-04	205	<0.1	<0.1	<0.1	**300**	<0.1	<0.1			
	13-Apr-04	218	<0.1	<0.1	<0.1	**290**	<0.1				
	27-Apr-04	232	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Dissolved Hydrocarbon Gases											
Ethane (µg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			<1.0				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	<1.0	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	<1.0	<1.0	<1.0				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	<1.0				
	31-Mar-04	205	<1.0	<1.0	<1.0	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	<1.0	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Ethene (µg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			<1.0				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Oct-03	51			<1.0		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	<1.0				
	09-Dec-03	92	<1.0	<1.0	<1.0	<1.0	<1.0				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	<1.0				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	<1.0				
	03-Feb-04	148	<1.0	<1.0	<1.0	<1.0	<1.0				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	<1.0	<1.0	<1.0				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	<1.0				
	31-Mar-04	205	<1.0	<1.0	<1.0	<1.0	<1.0				
	13-Apr-04	218	<1.0	<1.0	<1.0	<1.0	<1.0				
	27-Apr-04	232	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0			
Methane (µg/L)	13-Aug-03	-26			<1.0						
	14-Aug-03	-25	<1.0	<1.0			<1.0				
	08-Sep-03	0	<1.0	<1.0	<1.0	<1.0	<1.0				
	11-Sep-03	3	<1.0	<1.0	<1.0	<1.0	<1.0				
	16-Sep-03	8	<1.0	<1.0	<1.0	<1.0	<1.0				
	29-Sep-03	21	<1.0	<1.0	<1.0	<1.0	<1.0				
	15-Oct-03	37	<1.0	<1.0	<1.0	<1.0	**1.1**				
	29-Oct-03	51			**1.1**		<1.0				
	03-Nov-03	56	<1.0	<1.0		<1.0					
	11-Nov-03	64	<1.0	<1.0	<1.0	<1.0	<1.0				
	25-Nov-03	78	<1.0	<1.0	<1.0	<1.0	**2.41**				
	09-Dec-03	92	<1.0	<1.0	**6.4**	<1.0	**3.68**				
	06-Jan-04	120	<1.0	<1.0	<1.0	<1.0	**2.6**				
	20-Jan-04	134	<1.0	<1.0	<1.0	<1.0	**2.73**				
	03-Feb-04	148	<1.0	<1.0	**2.15**	<1.0	**6.34**				
	10-Feb-04	155						<1.0			
	17-Feb-04	162	<1.0	<1.0	**2.09**	<1.0	**10.3**				
	02-Mar-04	176	<1.0	<1.0	<1.0	<1.0	**1.33**				
	31-Mar-04	205	<1.0	<1.0	**12.1**	<1.0	**7.7**				
	13-Apr-04	218	<1.0	<1.0	**23.2**	<1.0	**7.17**				
	27-Apr-04	232	<1.0	<1.0	**48.6**	<1.0	**20.4**	<1.0			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS
Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Dissolved Metals											
Iron (mg/L)	04-Aug-03	-35								<0.3	**0.74**
	05-Aug-03	-34			**0.66**		<0.3		<0.3		
	14-Aug-03	-25	<0.3	<0.3							
	28-Aug-03	-11									
	08-Sep-03	0	<0.3	<0.3	<0.3	<0.3	<0.3				
	11-Sep-03	3	<0.3	<0.3	<0.3	<0.3	<0.3				
	16-Sep-03	8	<0.3	<0.3	<0.3	<0.3	<0.3				
	22-Sep-03	14				<0.3					
	29-Sep-03	21	<0.3	<0.3	**0.68**	<0.3	<0.3				
	07-Oct-03	29				<0.3					
	15-Oct-03	37	<0.3	<0.3	**0.64**	<0.3	**0.3**				
	21-Oct-03	43			**0.67**	<0.3	**0.36**				
	29-Oct-03	51			**0.98**		**0.45**				
	03-Nov-03	56	<0.3	<0.15		<0.15					
	11-Nov-03	64	<0.15	<0.15	**0.79**	<0.15	**0.49**				
	18-Nov-03	71				<0.15					
	25-Nov-03	78	<0.15	<0.15	**0.57**	<0.15	**0.45**				
	02-Dec-03	85				<0.15					
	09-Dec-03	92	<0.15	<0.15	**0.43**	<0.15	**0.54**				
	16-Dec-03	99				<0.15					
	02-Jan-04	116			**0.91**		**1.5**				
	06-Jan-04	120	<0.15	<0.15	**0.41**	<0.15	**0.56**				
	13-Jan-04	127				<0.15					
	20-Jan-04	134			**0.32**		**0.55**				
	27-Jan-04	141				<0.15					
	03-Feb-04	148	<0.15	<0.15	**0.45**	<0.15	**0.56**				
	10-Feb-04	155				<0.15		**0.34**			
	17-Feb-04	162			**0.45**		**0.55**	<0.15			
	24-Feb-04	169				<0.15					
	02-Mar-04	176	<0.15	<0.15	<0.15	<0.15	**0.57**	<0.15			
	09-Mar-04	183				<0.3					
	16-Mar-04	190	<0.3	<0.3	<0.3	<0.3	**0.59**	<0.3			
	31-Mar-04	205	<0.3	<0.3	**0.94**	<0.3	**0.56**	**0.56**			
	06-Apr-04	211				<0.3		<0.3			
	13-Apr-04	218	<0.3	<0.3	**0.42**	<0.3	**0.61**				
	20-Apr-04	225				<0.3					
	27-Apr-04	232	<0.3	<0.3	**0.34**	<0.3	**0.66**	<0.3	<0.3	<0.3	<0.3
	18-May-04	253			**0.56**		**0.69**	<0.3			
	01-Jun-04	267			**0.56**		**0.69**	<0.3			

TABLE 5-9: RESUTS OF CHEMICAL ANALYSIS

Active Perchlorate Bioremediation Demonstration

Analyte	Date Sampled	Days from Start of Electron Donor Addition	EW-1	EW-2	MW-1	RW-1	STSW-138A	STSW-166	STSW-38A	STSW-39A	STSW-39B
Manganese (mg/L)	04-Aug-03	-35								0.017	0.034
	05-Aug-03	-34			0.055		0.009		0.019		
	14-Aug-03	-25	<0.005	<0.005							
	28-Aug-03	-11									
	08-Sep-03	0	<0.005	<0.005	0.01	<0.005	<0.005				
	11-Sep-03	3	<0.005	<0.005	0.0055	<0.005	<0.005				
	16-Sep-03	8	<0.005	<0.005	0.099	<0.005	<0.005				
	22-Sep-03	14				<0.005					
	29-Sep-03	21	<0.005	<0.005	0.14	<0.005	0.019				
	07-Oct-03	29				<0.005					
	15-Oct-03	37	<0.005	<0.005	0.096	<0.005	0.024				
	21-Oct-03	43			0.089	<0.005	0.029				
	29-Oct-03	51			0.086		0.036				
	03-Nov-03	56	<0.005	<0.0025		<0.0025					
	11-Nov-03	64	<0.0025	<0.0025	0.085	0.0057	0.039				
	18-Nov-03	71				<0.0025					
	25-Nov-03	78	<0.0025	<0.0025	0.11	<0.0025	0.033				
	02-Dec-03	85				<0.0025					
	09-Dec-03	92	<0.0025	<0.0025	0.11	<0.0025	0.031				
	16-Dec-03	99				<0.0025					
	02-Jan-04	116			0.12		0.044				
	06-Jan-04	120	<0.0025	<0.0025	0.12	<0.0025	0.033				
	13-Jan-04	127				<0.0025					
	20-Jan-04	134			0.13		0.026				
	27-Jan-04	141				<0.0025					
	03-Feb-04	148	<0.0025	<0.0025	0.14	<0.0025	0.025				
	10-Feb-04	155				<0.0025		0.0094			
	17-Feb-04	162			0.15		0.024	0.0079			
	24-Feb-04	169				<0.0025					
	02-Mar-04	176	<0.0025	<0.0025	0.17	<0.0025	0.021	<0.0025			
	09-Mar-04	183				<0.005					
	16-Mar-04	190	<0.005	<0.005	0.18	<0.005	0.021	0.0084			
	31-Mar-04	205	<0.005	<0.005	0.29	<0.005	0.019	<0.005			
	06-Apr-04	211				<0.005		<0.005			
	13-Apr-04	218	<0.005	<0.005	0.33	<0.005	0.019				
	20-Apr-04	225				<0.005					
	27-Apr-04	232	<0.005	<0.005	0.36	<0.005	0.02	<0.005	0.011	0.023	0.0065
	18-May-04	253			0.38		0.032	<0.005			
	01-Jun-04	267			0.41		0.036	<0.005			

Notes:

µg/L - micrograms per litre

mg/L - milligrams per litre

Scale - Qualititative score for measurement of *Dehalococcoides* presence

Perchlorate varied from 250 to 480 µg/L at EW-1 (median: 350 µg/L) and from 1,900 to 3,000 µg/L at EW-2 (median: 2,400 µg/L). Influent concentrations at RW-1 tracked EW-2 concentrations and typically ranged from 1,300 to 2,500 µg/L over the course of the study (median: 1,900 µg/L, excluding a questionable non-detect and two anomalously low values).

Following electron donor addition, perchlorate concentrations declined rapidly in monitoring well MW-1, reaching non-detect on 7 October 2003 (Day 30), and generally remained non-detect throughout the remainder of the pilot test, and for over 2 years after the test. Moreover, "normal" perchlorate concentrations (~1,500 µg/L) had not returned to MW-1 (~70 µg/L) by late 2009. Evaluation of the perchlorate concentrations at MW-1 indicates that there was very little acclimation period before perchlorate degradation occurred following addition of the electron donor. Based on the data for MW-1, the half-life for perchlorate biodegradation can be calculated as 1.1 days, consistent with perchlorate biodegradation half-lives measured for other perchlorate sites (Cox et al., 2001).

At monitoring well STSW-138A, perchlorate concentrations declined to non-detect on 2 December 2003 (Day 86) and generally remained non-detect throughout the remainder of the pilot test, and for approximately five months after the test. Normal perchlorate concentrations returned to STSW-138A during late 2005, approximately one year after perchlorate was detected again.

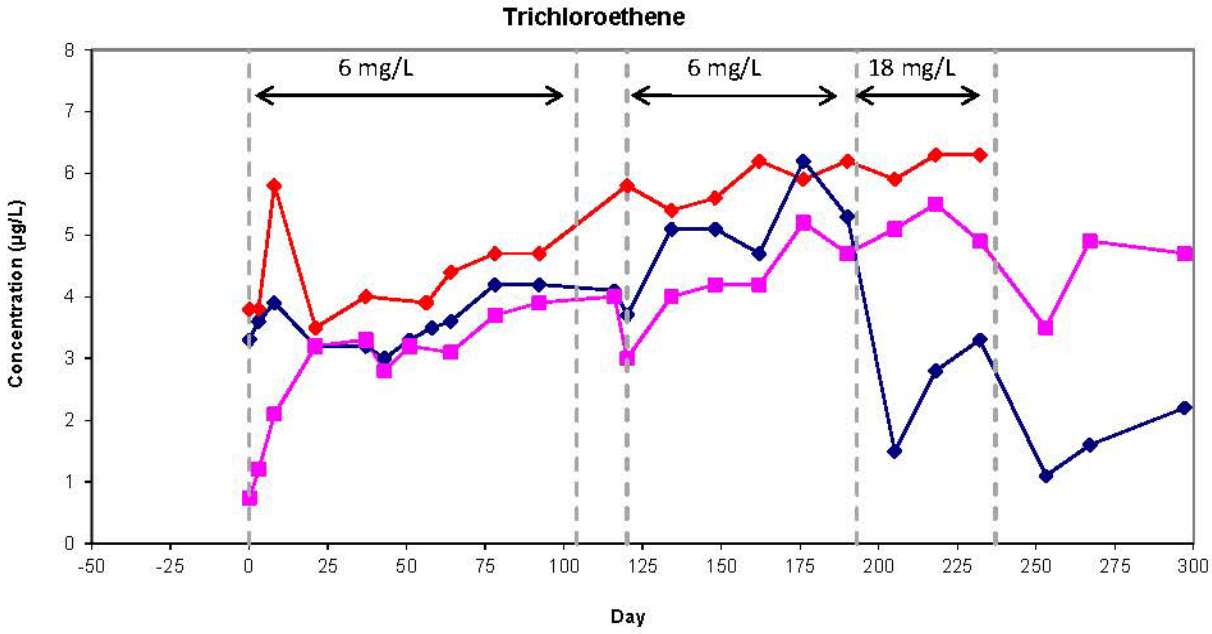
Perchlorate biodegradation was able to continue after the demonstration test because the ethanol dosing was able to create and sustain a large mass of bacteria within a biologically-active zone (BAZ) between RW-1 and MW-1. Without ethanol, the bacterial mass would have declined and living bacteria would feed on dead bacteria while consuming perchlorate, nitrate, and dissolved oxygen in the groundwater flowing into the bacterial mass. MW-1 was probably located near the center of this biomass and was able to maintain the degradation of perchlorate much longer than the peripheral location of STSW-138A. The locations of these wells suggest a maximum BAZ width between 150 and 200 feet for the 7.8-month test. The BAZ continued to reduce perchlorate concentrations around MW-1 for over 5 years after the test.

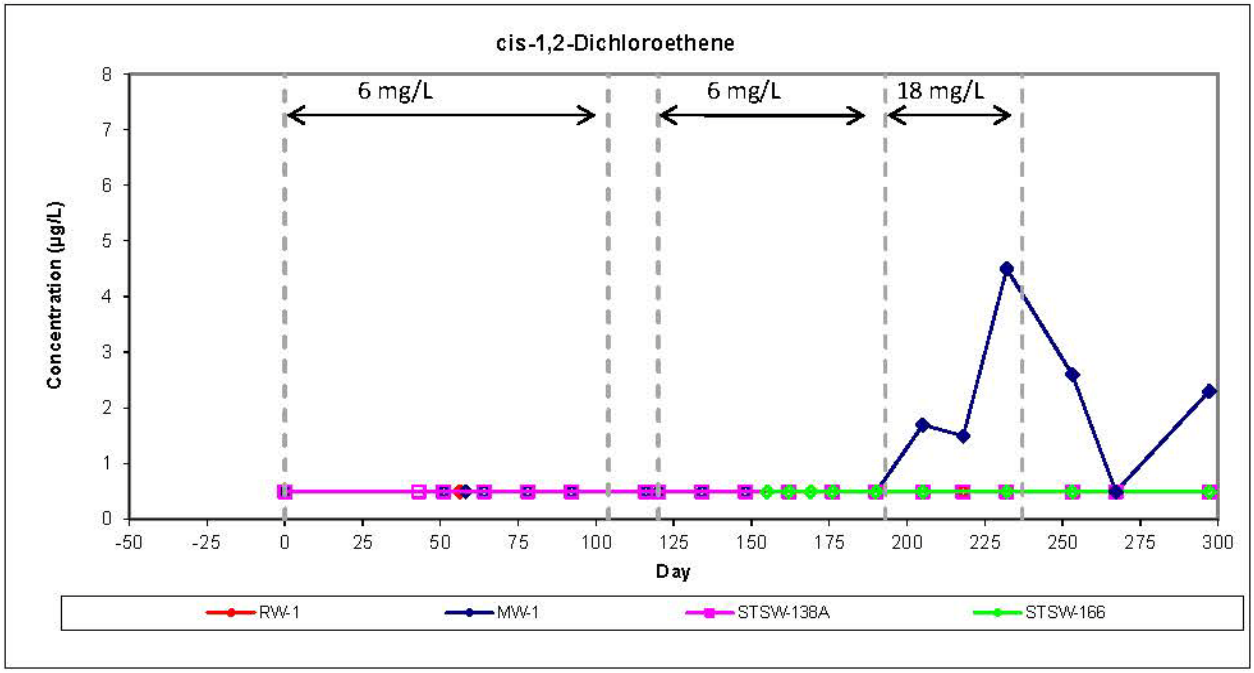
Perchlorate at STSW-166 was found to be declining during the latter third of the test (new well) and for over 6 months after the test. Normal perchlorate concentrations probably returned to STSW-166 during 2008. These data show that treated groundwater migrated downgradient of the BAZ into the vicinity of STSW-166.

5.6.6 Results of Trichloroethene Analysis

Figure 5-5 presents trends in TCE concentrations in the demonstration test area groundwater over the duration of the test. TCE data are presented in Table 5-9.

TCE concentrations at EW-2 generally increased during the pilot test, ranging from 4.3 to 9.0 µg/L, whereas TCE was not detected at EW-1 based on a PQL of 0.5 µg/L. Influent





Notes:
Open symbols represent non-detects
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

Trichloroethene Biodegradation Results
Active Perchlorate Bioremediation Demonstration

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Figure 5-5

concentrations at RW-1 ranged between 3.5 and 6.3 µg/L and generally increased during the course of the test, consistent with EW-2.

TCE concentrations at the monitoring wells MW-1 and STSW-138A began increasing, consistent with RW-1, throughout much of the pilot test, and to a lesser extent at STSW-166, because the indigenous bacteria could not degrade the TCE. Following Bioaugmentation B at MW-1, the TCE concentration decreased to 1.5 µg/L within 7 days. Coincident with the decline in TCE concentrations at MW-1, cis-1,2-DCE concentrations increased from non-detect (<0.5 µg/L) to a maximum of 4.5 µg/L, as shown in **Figure 5-5**. After the ethanol was consumed near MW-1, TCE concentrations began to increase while cis-1,2-DCE began to decrease. Normal TCE concentrations returned to MW-1 after approximately 2 years and cis-1,2-DCE persisted for approximately 20 months.

TCE concentrations at STSW-138A declined slowly after the end of the pilot test and reached minimum values (1.1 µg/L) between December 2005 and May 2006 before increasing again. The groundwater did not contain any cis-1,2-DCE.

TCE concentrations at STSW-166 was similar to MW-1 until early 2007, and cis-1,2-DCE occurred sporadically during the first two years after the demonstration test. Vinyl chloride and ethene were never detected above their respective PQLs, and therefore, TCE biodegradation was limited even with increased electron donor and bioaugmentation. Several factors may explain this result. First, *Dehalococcoides* use TCE as a respiratory substrate. The concentration of TCE in the demonstration test area groundwater was very low, and was probably not sufficient to support the establishment and activity of the microbial population. Secondly, the increase of electron donor was tightly constrained throughout the demonstration test, to avoid creation of secondary water quality impacts (e.g., manganese mobilization). These conditions likely limited the establishment of geochemical conditions favorable for *Dehalococcoides*, and hence limited establishment and growth of the culture. Finally, the aerobic nature of the feed water to the active biobarrier made introduction of KB-1 into an appropriate anaerobic environment significantly challenging. It is worth clarifying that bioaugmentation with KB-1 did not fail: *Dehalococcoides* were detected in the aquifer at several wells following their introduction. Rather, operating conditions favoring establishment and activity of KB-1 could not be created and maintained throughout the demonstration test area over a sufficiently long term. Future potential use of KB-1 should consider only areas where sufficient VOCs are present to establish and maintain the culture. Moreover, the delivery method should include an adequately-sized well (minimum 4-inch instead of 2-inch) within the BAZ to disperse KB-1 into the aquifer.

5.6.7 Results of Supporting Groundwater Chemistry

The following sections summarize the inorganic results for key supporting geochemical parameters, including nitrate, sulfate, DHGs, dissolved metals and VOCs (listed in **Table 5-9**).

Nitrate and Sulfate

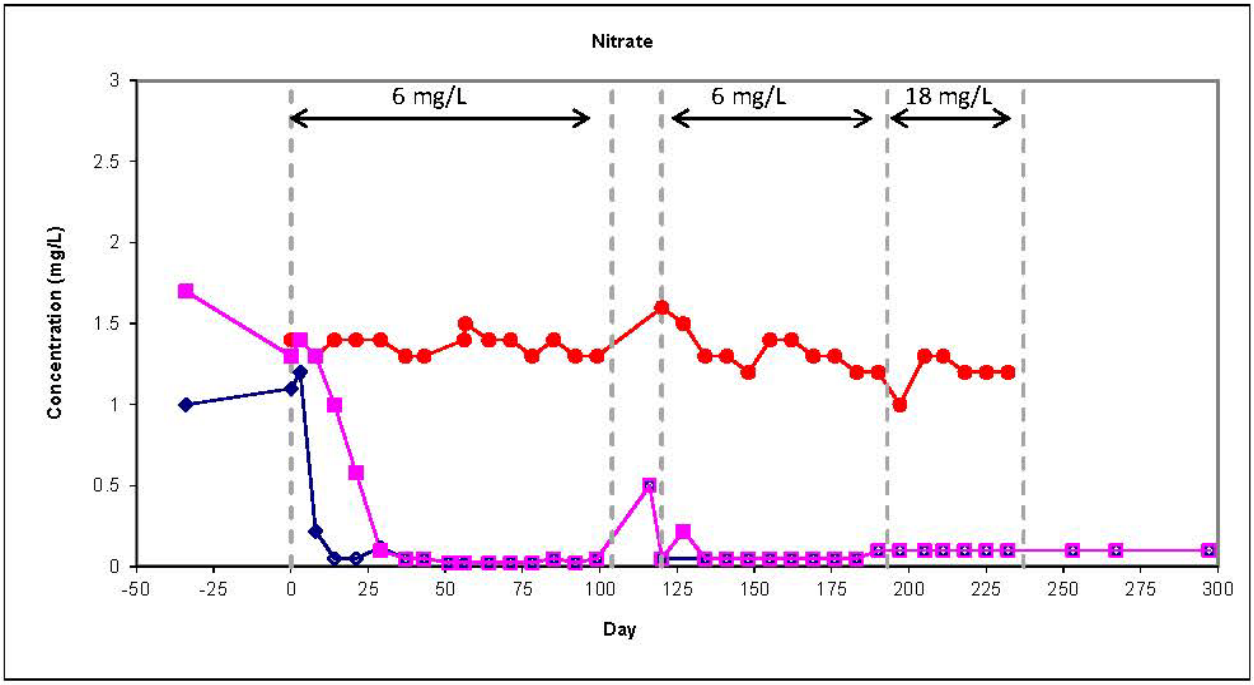
Figure 5-6 presents the trends in the concentrations of nitrate in the demonstration test area groundwater. Nitrate concentrations in the extraction and recharge wells EW-1, EW-2 and RW-1 remained relatively stable throughout the pilot study, ranging between 1.0 and 1.9 mg/L. Some reduction is noticeable at EW-2 and RW-1 toward the end of the test, as more water impacted by the addition of electron donor was circulated to these wells. Nitrate concentrations in groundwater at monitoring well MW-1 declined from a background of approximately 1.0 mg/L to non-detect at a PQL of 0.05 mg/L within 14 days of electron donor addition. Nitrate was still non-detect approximately 2.5 years after the test. Similarly, nitrate concentrations in the transgradient monitoring well STSW-138A declined from approximately 1.3 mg/L to <0.05 mg/L within 37 days after the addition of electron donor. Nitrate had recovered at STSW-138A to pre-test concentrations after approximately one year. At STSW-166, nitrate declined during the latter part of the pilot test and continued to decline for a year after the test. Moreover, nitrate concentrations have recovered slowly since the well continues to receive groundwater from the vicinity of MW-1.

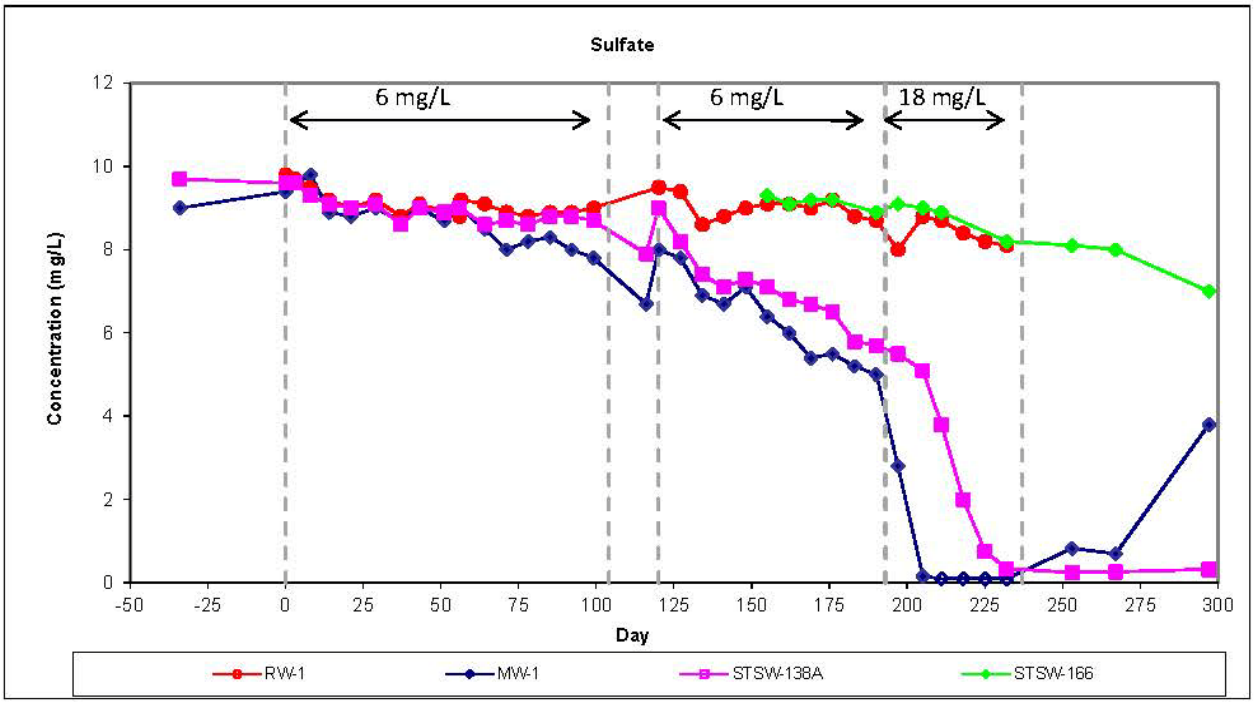
Figure 5-6 also presents the trends in the concentrations of sulfate in the demonstration test area groundwater. Sulfate concentrations remained relatively stable during the period when the electron donor concentration was constrained to 1X the stoichiometric demand. Sulfate concentrations decreased rapidly in MW-1 following the second bioaugmentation event, when the electron donor concentration was increased to 3X the stoichiometric demand, and were non-detect until the end of the test. Similarly, sulfate decreased at STSW-138A but was delayed slightly and the decrease was less. Sulfate also declined at STSW-166 as groundwater from the MW-1 flowed past STSW-166. The overall sulfate data confirm that perchlorate degradation can be accomplished without sulfate reduction, through control of electron donor addition, but that electron donor addition levels required for TCE reduction cause sulfate reduction.

Sulfate recovered to normal concentrations within approximately 15 months at STSW-166 and with approximately 22 months at STSW-138A. Conversely, sulfate at MW-1 rebounded within five months to twice the pretest concentrations and then declined to near-normal concentrations by December 2006.

Dissolved Hydrocarbon Gases

Ethane and ethene were not detected throughout the pilot test in all wells. Similarly, methane was not detected at EW-1, EW-2, RW-1 or STSW-166, although methane concentrations increased at wells MW-1 and STSW-138A, particularly in response to the second bioaugmentation event and associated increase in electron donor dose rate. **Figure 5-7** presents methane concentration trends.





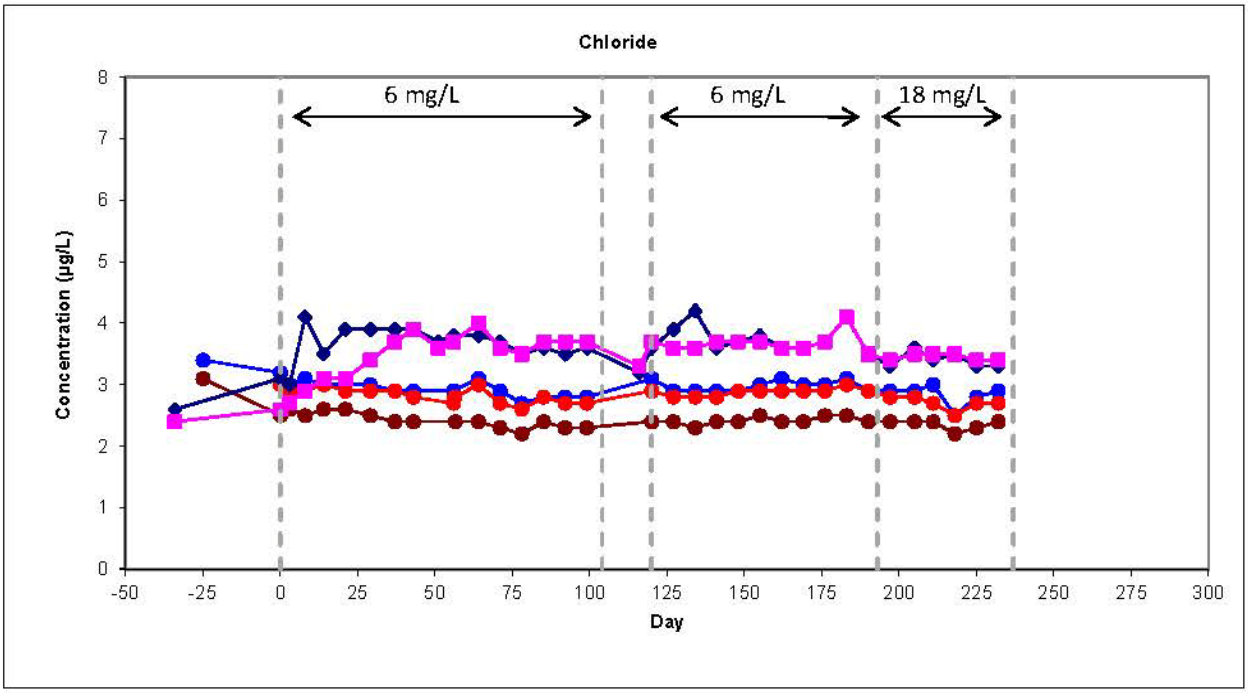
Notes:
Open symbols represent non-detects
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

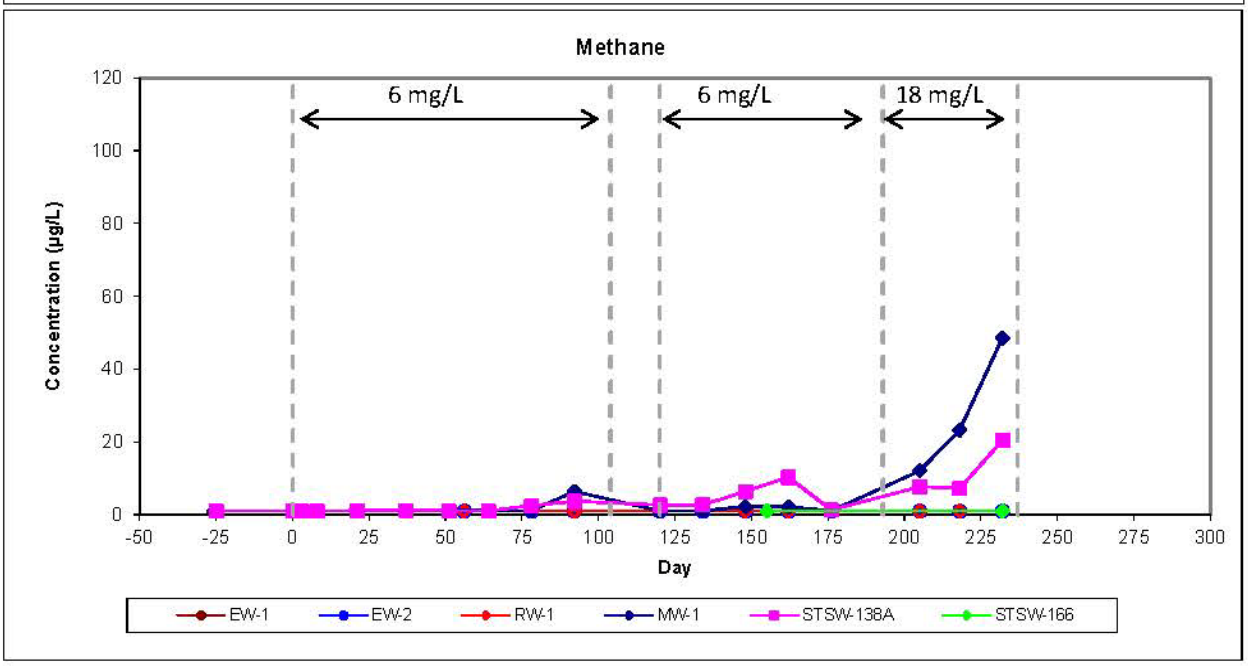
Nitrate and Sulfate Concentration Trends
Active Perchlorate Bioremediation Demonstration

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Figure 5-6





Notes:
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

Chloride and Methane Concentration Trends
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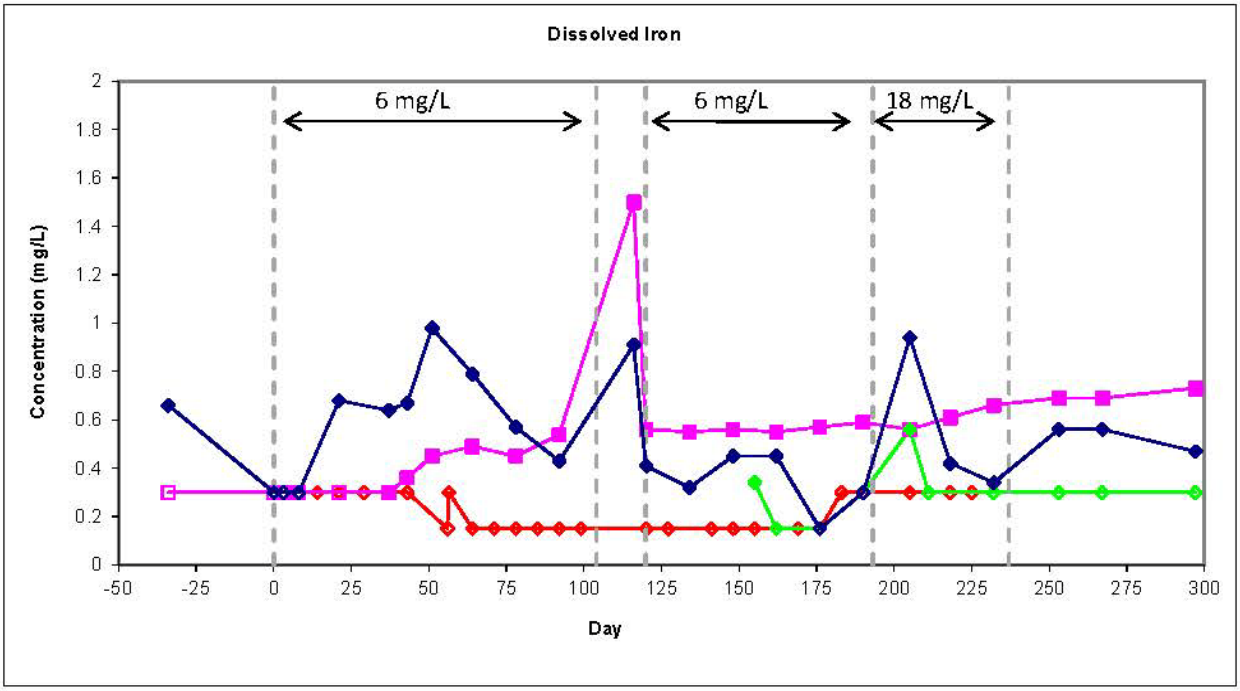
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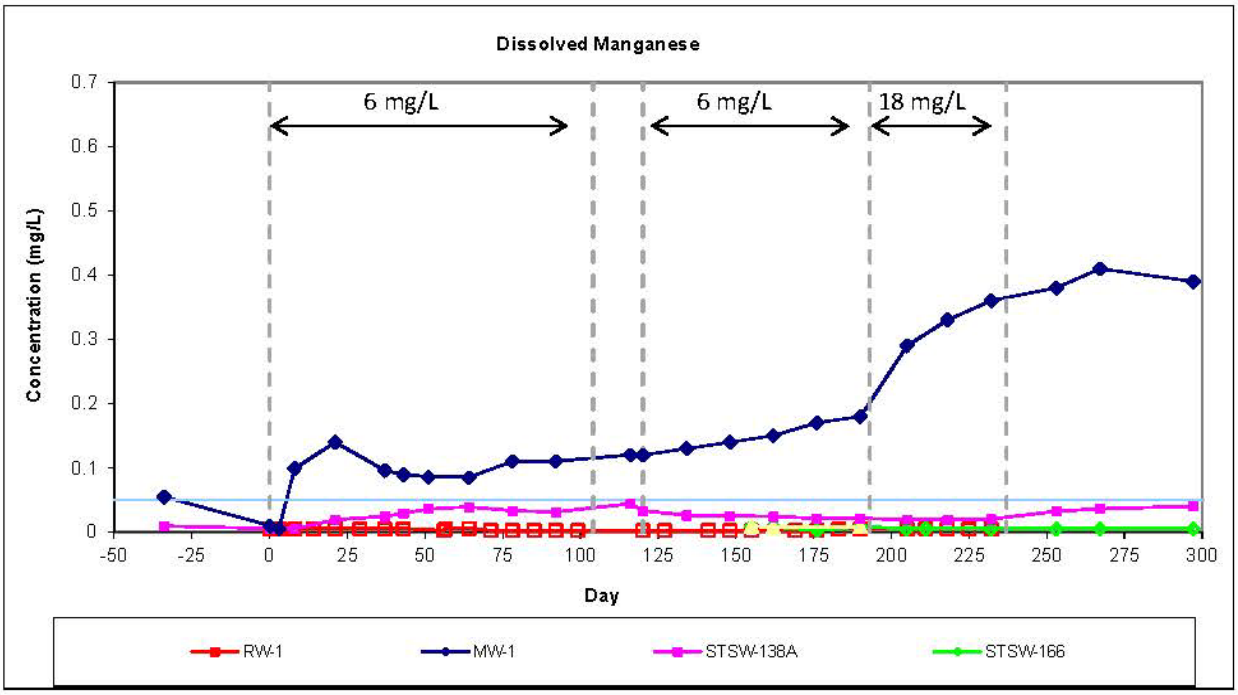
Figure 5-7

Dissolved Metals

Figure 5-8 presents the concentration trends for dissolved iron and dissolved manganese, two metals known to be mobilized under anaerobic conditions. Iron was present at monitoring well MW-1 prior to the test, showed some fluctuations during the pilot test and then declined after the test until December 2005 when concentrations began to increase. Conversely, iron at STSW-138A was not detected until over 3 weeks after starting the demonstration test and then rose quickly before leveling off. Iron concentrations rose slightly near the end of the test, possibly due to the higher ethanol dosing in the last period of the test. Iron at STSW-138A remained relatively high for several months after the test and then iron was non-detect by August 2005. Iron concentrations at downgradient monitoring well STSW-166 were virtually non-detect based on a PQL of 0.3 mg/L), which also is the secondary MCL for iron. The high iron in MW-1 groundwater appeared to have attenuated before arriving at STSW-166 until late 2006, as shown by the steady iron non-detects, but then increased thereafter, similar to active values of the pilot test.

Manganese concentrations increased in monitoring wells MW-1 and STSW-138A following the initiation and subsequent increases in electron donor delivery. Concentrations in MW-1 appeared to be less than 0.1 mg/l prior to the test and then increased steadily to nearly 0.2 mg/L during the perchlorate degradation period. After the bioaugmentation of MW-1 in late March 2004, manganese concentrations increased again to nearly 0.6 mg/l shortly after the termination of the test. Manganese at MW-1 decreased slightly thereafter, but has remained at approximately 0.5 mg/l though September 2009. Importantly, manganese concentrations at well STSW-138A remained below the secondary MCL for manganese (0.05 mg/L) throughout the study. Manganese concentrations at downgradient monitoring well STSW-166 were below the secondary MCL during the latter portion of the pilot test and were non-detect for nearly one year thereafter. However, manganese has been detected at STSW-166 at concentrations below the secondary MCL.





Dissolved Iron and Manganese Concentration Trends
Active Perchlorate Bioremediation Demonstration

Notes:
Open symbols represent non-detects
Day "0" = 8-Sep-03
"6 mg/L" - dose rate of ethanol

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Figure 5-8

6. PERFORMANCE ASSESSMENT

The performance objectives and results for this Demonstration are shown in **Table 6-1** and are discussed below.

6.1 Ease of Installation

The ease of installation of electron donor delivery components was evaluated based on the experience of field staff and the actual availability and costs of installed equipment. The success criterion for this objective is that the electron donor delivery system can be readily installed using standard industry procedures and contractors.

This objective was achieved based on experience with the actual installation of the groundwater recirculation and electron donor delivery systems at the IRCTS. The equipment required for the active groundwater recirculation and injection of electron donor was all readily available through local drillers and plumbing suppliers. The ClO_2 biofouling control system was also available and straightforward to install. The procedures used to install the equipment were standard and well established procedures for local drillers and the procedures were simple enough to be conducted by field technicians with training in basic plumbing techniques.

6.2 Ease of Electron Donor Delivery Events

The ease of electron donor delivery events was evaluated based on the experience of field staff who conducted the actual electron donor events. The success criterion for this objective is that electron donor delivery events can be conducted by field staff with minimal training and effort.

This objective was achieved based on experience of field staff with the actual electron donor delivery events. The activities and procedures required for the electron donor delivery events were simple enough to be conducted by field staff with minimal specialized training and effort.

Electron donor was added to the groundwater recirculation injection well on a daily basis. Commercially available ethanol was used as the electron donor. There were some safety issues to be addressed with the use of ethanol as a result of its flammability, but once the appropriate storage equipment and procedures were put in place there were no significant issues with the addition of electron donor.

The groundwater recirculation system was operated on a continuous basis and there were no indications that significant fouling was occurring in the groundwater injection well. The injection well was equipped with a high level shut off switch to shut off the recirculation of groundwater if the water level in the injection well rose indicating that the well was becoming fouled but no such events occurred during operation. It is believed that the pulsed injection of electron donor over one hour each day followed by an injection of ClO_2 was an effective operating strategy for controlling biofouling of the injection well.

TABLE 6-1: PERFORMANCE OBJECTIVES AND RESULTS

Active Perchlorate Bioremediation Demonstration

Performance Objective	Data Requirement	Success Criteria	Results
Qualitative Performance Objectives			
1) Ease of Installation of Electron Donor Delivery Components	Experience of demonstration operators; actual availability and costs of installed equipment	Electron donor delivery system can be readily installed by standard industry procedures/contractors	Objective achieved - experience with system installation demonstrates that electron donor delivery system can be readily installed by standard industry procedures/contractors
2) Ease of Electron Donor Delivery Events	Experience of demonstration operators; and costs of events	Electron donor delivery events can be conducted with minimal training and effort	Objective achieved - Experience of operators demonstrates that electron donor delivery events can be conducted with minimal training and effort
3) Enhancement of Microbiological Activity	Groundwater and soil analyses for geochemical characterization	Electron donor addition enhances microbiological activity in the treatment zone	Objective achieved - Groundwater monitoring data demonstrates that electron donor addition enhances microbiological activity in the treatment zone
4) Ease of Performance Monitoring and Validation	Quality of data and ability to interpret and quantify biodegradation with confidence	Performance monitoring network allows straightforward data collection, interpretation and validation	Objective achieved - Quality of data and ability to interpret and quantify biodegradation with confidence demonstrates that performance monitoring network allows straightforward data collection, interpretation and validation
Quantitative Performance Objectives			
5) Reduction in Perchlorate Concentration	Groundwater sampling of performance monitoring wells	Perchlorate concentrations reduced to practical quantitation limit of 0.004 mg/L	Objective achieved - Groundwater sampling of performance monitoring wells demonstrates that the average perchlorate concentrations were reduced to below the practical quantitation limit of 4 µg/L
6) Radius of Influence and Distance for Degradation	Groundwater sampling of performance monitoring wells	Radius of influence for electron donor addition will extend to target treatment area and perchlorate will be degraded before groundwater reaches the furthest downgradient performance monitoring wells.	Objective achieved - Groundwater sampling of performance monitoring wells during tracer test and following electron donor addition demonstrate that the area of influence extends between injection and extraction wells and perchlorate was degraded before groundwater reaches downgradient performance monitoring wells

Notes:

µg/L - micrograms per Liter

6.3 Enhancement of Microbiological Activity

The enhancement of microbiological activity was evaluated using groundwater analysis for geochemical parameters. The success criterion for this objective is that electron donor addition enhances microbiological activity in the treatment zone.

This objective was achieved based on the results of chemical and geochemical characterization. Groundwater monitoring data for chemical and geochemical parameters demonstrated that electron donor addition enhanced microbiological activity in the treatment zone. Significant and sustained reductions in ORP were observed following addition of electron donor and provide the first indication that biological activity was enhanced by the addition of electron donor. A statistical analysis of ORP data was conducted (see Appendix D) and shows a very high level of confidence that the injection of electron donor in the biobarrier resulted in significant reductions in ORP that are indicative of enhanced biological activity. The ORP values measured in monitoring wells: (1) MW-1; and (2) STSW-138A were evaluated before (day -34 to day -6) and during amendment with electron donor (day 56 to day 232).

The mean and standard deviation of the ORP values from each monitoring well in each of the two time periods were calculated and are presented in Appendix D Tables D-1 and D-2. In addition, a one-tailed Student's t-test was conducted at a 5% level of significance and assuming equal sample variances. The null hypothesis of the t-test is that the mean ORP value for the time period following the amendment with electron donor was greater than or equal to the mean ORP value for the time period preceding the amendment, or the mean baseline ORP. Tables D-1 and D-2 show the p-values from the t-tests for ORP data from MW-1 and STDW-138A, respectively. The p-value is the probability of obtaining a test statistic at least as extreme as the one observed. If the p-value is less than the specified alpha level, i.e., 0.05, then there is sufficient evidence to reject the null hypothesis. The p-values for the comparison of means from the period of time before amendment and after amendment for MW-1 and STSW-138A are 1.56×10^{-10} and 6.5×10^{-6}, respectively. As these values are significantly lower than 0.05, the null hypothesis is rejected and we can conclude that the mean ORP after amendment is statistically lower than that at the baseline. Therefore, the results of the t-test confirm that ORP concentrations did indeed decrease after amendment.

The reductions in perchlorate concentrations in groundwater observed following addition of electron donor provide additional indications that biological activity was enhanced by the addition of electron donor and that this biological activity included microorganisms capable of degradation of perchlorate. The reductions in perchlorate are discussed further in Section 6.5.

6.4 Ease of Performance Monitoring and Validation

The ease of performance monitoring and validation was evaluated based on the quality of the data obtained and the ability to interpret and quantify biodegradation with confidence. The

success criterion for this objective is that the performance monitoring network and sampling conducted allows for straightforward data collection, interpretation and validation.

This objective was achieved based on the data obtained during the demonstration. The quality of the data obtained and the ability to interpret this data and quantify biological activity (by the reduction in ORP) with confidence and reduction in perchlorate demonstrated that the performance monitoring network allowed for straightforward data collection, interpretation and validation.

The monitoring well network installed for the demonstration allowed the collection of groundwater samples for measurement of field parameters and for chemical analysis from key locations in the demonstration test area.

Measurement of field parameters and analysis of samples collected from monitoring wells allowed for data to be collected which demonstrated significant reductions in ORP associated with the enhancement of biological activity resulting from the addition of electron donor. The reduction in ORP in samples from monitoring wells in the demonstration area provided a quantitative measure of the biological activity in the subsurface. The monitoring well network allowed for the collection of data that showed the reduction in perchlorate concentrations to validate the performance of the technology.

6.5 Reduction in Perchlorate Concentration

The reduction in perchlorate concentrations was evaluated based on groundwater sampling of performance monitoring wells. The success criterion for this objective is that perchlorate concentrations are reduced to the practical quantitation limit of 4.0 µg/L. **Figure 5-4** shows the concentration of perchlorate in key monitoring wells in the biobarrier over the course of the demonstration test. Appendix D presents the statistical analysis of the data to support this conclusion.

The concentrations of perchlorate in monitoring wells: (1) MW-1; and (2) STSW-138A varied between 1,400 µg/L and 2,600 µg/L before operation of the groundwater recirculation and amendment addition system was initiated at Day "0". The concentration of perchlorate in MW-1 dropped very quickly and was non-detect (i.e., <4.0 µg/L) by day 29. The concentration remained less than 4.0 µg/L until the end of the test at Day 232 with the exception of two excursions to 16 and 4.7 µg/L on Day 85 and Day 176.

The concentration of perchlorate in STSW-138A dropped down more slowly than in MW-1 but was non-detect (i.e., <4.0 µg/L) by day 85. The groundwater recirculation and electron donor amendment system was shut off from day 104 to day 120. During this period of time, the concentration of perchlorate in monitoring well STSW-138A increased up to 14 µg/L at day 116 but dropped back down to less than 4.0 µg/L on day 127 and remained less than 4.0 µg/L to the end of amendment injection period at day 232. It is likely that when the recirculation system was shut off at day 104, un-amended groundwater from upgradient of STSW-138A began to flow

into the monitoring well and resulted in the short term increase in perchlorate concentrations in this monitoring well.

The average perchlorate concentrations measured in: (1) MW-1 from day 29 to the end of amendment injection period (2.6 µg/L); and (2) STSW-138A from day 85 to the end of amendment injection period (2.9 µg/L) were all less than 4.0 µg/L. The 95th percentile perchlorate concentrations measured in: (1) MW-1 from day 29 to the end of amendment injection period (3.6 µg/L); and (2) STSW-138A from day 127 to the end of amendment injection period (2.0 µg/L) were all less than 4.0 µg/L.

This objective was achieved based on groundwater sampling of performance monitoring wells that demonstrated that the average perchlorate concentrations were reduced to below the PQL of 4.0 µg/L during the during the operating period.

6.6 Radius of Influence and Distance for Degradation

The radius of influence and distance for degradation was evaluated based on the results of groundwater samples collected from the performance monitoring wells. The success criterion for this objective is that the radius of influence for electron donor addition will extend between recirculation wells and that perchlorate will be degraded before groundwater reaches the furthest downgradient performance monitoring well.

This objective was achieved based on groundwater sampling results from performance monitoring wells during the tracer tests and following electron donor delivery which demonstrated that the radius of influence of the system extends between the recirculation wells and that perchlorate was degraded before groundwater reached downgradient performance monitoring wells.

A summary of the results of the tracer test is shown in **Figures 5-2.** The figures show the tracer concentrations in wells in the demonstration test area. During the tracer test, groundwater was extracted from EW-1 at a rate of 20 gpm and from EW-2 at a rate of 40 gpm and all of the extracted groundwater was injected into RW-1. The tracer was observed in EW-2 after approximately 50 days demonstrating a hydraulic connection between the injection and extraction well. The tracer was observed at EW-1 with a lower extraction rate starting at about 200 days again demonstrating a hydraulic connection between the injection and extraction well.

The distance for degradation was demonstrated by the reductions in perchlorate in monitoring wells MW-1 and STSW-138A approximately 50 feet and 85 feet from the injection well RW-1. Degradation of perchlorate occurred in wells very close to the alignment of the biobarrier indicating that the degradation of perchlorate can occur within a very short distance from the electron donor injection point.

7. COST ASSESSMENT

This section presents the results of a cost assessment to implement EISB for perchlorate impacted groundwater using the active approach for the addition of electron donor. Section 7.1 describes a costing model that was developed for the application of EISB with a comparison to other approaches to implementing EISB and to a pump and treat system, Section 7.2 presents an assessment of the cost drivers for the application of the technology, and Section 7.3 presents the results of an analysis of the costing model.

7.1 Cost Model

A cost model was developed for EISB for this report and for the recently released SERDP/ESTCP monograph on *In Situ* Bioremediation of Perchlorate in Groundwater (Stroo and Ward, 2009).

The cost model was developed for a template site based on a typical site with perchlorate impacted shallow groundwater. The specific site characteristics used are presented in **Table 7-1** and an illustration of the plume and biobarrier are provided in **Figure 7-1**. Cost estimates were prepared for an active EISB remedy along with three other approaches to implementing EISB and for a conventional pump and treat system. Using the template site conditions, the cost model identifies the major cost drivers for the active approach and provides an estimate of costs for the capital, O&M, and long-term monitoring. Capital costs included design and permitting activities, mobilization, site preparation, well installation, chemical reagents, management, and derived waste disposal. O&M costs included mobilization, equipment replacement and supplies (e.g., electron donor). Long-term monitoring costs included field supplies, sampling equipment, laboratory analysis and regulatory reporting. Labor associated with the planning, procurement and implementation of all aspects of the active EISB approach is also included. Excluded from consideration are the costs of pre-remediation investigations (e.g., plume delineation, risk determination, and related needs), treatability studies, source zone treatment, and post remediation decommissioning activities.

The cost estimates focused on treatment of a contaminated plume of groundwater and costs for possible source zone treatment are not included. In reality, it may be appropriate to treat source areas which may contain a significant mass of perchlorate and contribute slowly to elevated concentrations in groundwater. A perchlorate "source" may take a variety of forms including:

1. perchlorate in the geological media above the water table (the "vadose zone") which is carried into the groundwater by water infiltrating from the surface and flushing the perchlorate into the groundwater;
2. perchlorate in the vadose zone which dissolves into the groundwater as groundwater elevations increase (possibly on an intermittent basis) and saturate the vadose zone containing the perchlorate;
3. perchlorate disposed of below the water table in a manner that allows the perchlorate to be releases into the groundwater over an extended period of time; and

TABLE 7-1: SITE CHARACTERISTICS AND DESIGN PARAMETERS FOR EISB OF PERCHLORATE IMPACTED GROUNDWATER
Active Perchlorate Bioremediation Demonstration

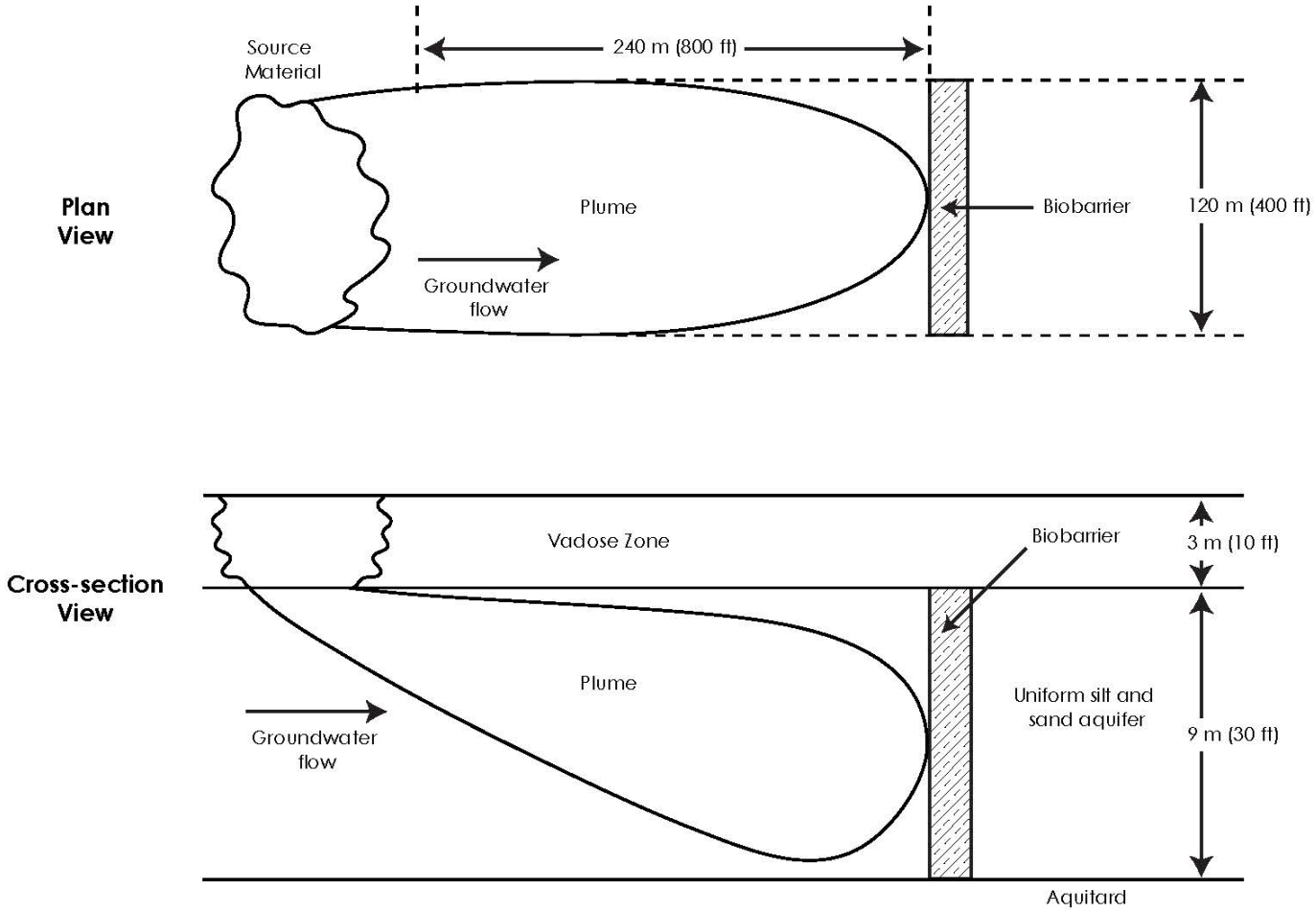
		Scenario / Case Description and Number												
Design Parameter	**units**	**Base Case**	**Accelerated Clean Up Case**	**Low Perchlorate Conc. Case**	**High Perchlorate Conc. Case**	**Low Donor Demand Case**	**High Donor Demand Case**	**Low GW Velocity Case**	**High GW Velocity Case**	**Deep GW Case**	**Thin Interval Case**	**Thick Interval Case**	**Narrow Plume Case**	**Wide Plume Case**
		Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	Case 9	Case 10	Case 11	Case 12	Case 13
Width of Plume	meters	120	120	120	120	120	120	120	120	120	120	120	30	240
	feet	400	400	400	400	400	400	400	400	400	400	400	100	800
Length of Plume	meters	240	240	240	240	240	240	240	240	240	240	240	240	240
	feet	800	800	800	800	800	800	800	800	800	800	800	800	800
Porosity		0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Gradient		0.008	0.008	0.008	0.008	0.008	0.008	0.0008	0.016	0.008	0.008	0.008	0.008	0.008
Hydraulic Conductivity*	cm/sec	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Upgradient Perchlorate Concentration	mg/L	2	2	0.4	10	2	2	2	2	2	2	2	2	2
Downgradient Perchlorate Concentration	mg/L	1.1	1.1	0.22	5.5	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Nitrate Concentration	mg/L	15	15	15	15	5	30	15	15	15	15	15	15	15
Dissolved Oxygen Concentration	mg/L	5	5	5	5	2	8	5	5	5	5	5	5	5
Depth to Water	m bgs	3	3	3	3	3	3	3	3	30	3	3	3	3
	ft bgs	10	10	10	10	10	10	10	10	100	10	10	10	10
Vertical Saturated Thickness	m	9	9	9	9	9	9	9	9	9	3	15	9	9
	ft	30	30	30	30	30	30	30	30	30	10	50	30	30
Cross Sectional Area of Plume	m^2	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	1,080	360	1,800	270	2,160
	ft^2	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	4,000	20,000	3,000	24,000
GW Seepage Velocity	m/year	10	10	10	10	10	10	1	20	10	10	10	10	10
	ft/year	33	33	33	33	33	33	3.3	66	33	33	33	33	33
Perchlorate Treatment Objective	mg/L	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245	0.0245
Assumed Number of Pore Volumes to Flush Plume		2	2	2	2	2	2	2	2	2	2	2	2	2
Number of Barriers Perpendicular to GW Flow		1	5	1	1	1	1	1	1	1	1	1	1	1
GW Travel Time to Barrier(s)	years	24	5	24	24	24	24	240	12	24	24	24	24	24
Years to Clean Up GW	years	48	10	48	48	48	48	480	24	48	48	48	48	48

notes:

* hydraulic conductivity based on uniform silty sand aquifer

- input parameters changed from base case

bgs - below ground surface
cm/sec - centimeters per second
ft - feet
GW - groundwater
kg - kilograms
L - liters
m - meters
mg/L - milligrams per liter
Conc. - Concentration



Base Case Plume and Biobarrier Configuration
Active Perchlorate Bioremediation Demonstration

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Figure **7-1**

Biowall Configuration_2012.ai

4. perchlorate which was released into the groundwater at high concentrations and diffused into low hydraulic conductivity (K) units in the geological media and which continue to diffuse out of the low K units as the upgradient source of perchlorate is depleted.

If the "source" material is not treated, it may continue to feed the plume for an extended period of time and it may be necessary to treat the plume for a longer period of time until the source zone is sufficiently depleted. The active remedial approach could be used in a modified configuration to treat source areas below the water table. The benefits of an active approach in the source area would be that the time frame for operation could be significantly less than that for a system that simply treats a downgradient plume of perchlorate as it released from the source area. Applying an active approach in the source area would likely be more expensive than a downgradient barrier in terms of initial capital costs and annual O&M costs but overall savings may be achieved because of a shorter duration of operation. Costs for active treatment of source areas are discussed in Section 7.3. Sources of perchlorate above the water table may be treated using other approaches such as enhanced flushing of the vadose zone that are beyond the scope of the cost estimate presented in this chapter.

To obtain a clearer picture of life-cycle costs for the various options, estimates include the Net Present Value (NPV) of future costs. The NPV calculations provide cash flow analysis for 30 years, showing the costs by category for each year. The future costs are only carried forward for 30 years on the basis that the NPV of future costs beyond the 30-year time frame are small and the future costs beyond the 30-year period of time are difficult to predict. O&M and long-term monitoring costs are discounted at a rate of 3%, to develop the NPV estimates of future costs (DOD, 1995). The rate of 3% is based on the U.S. Federal Government Office of Management and Budget "Real Interest Rates on Treasury Notes and Bonds" for 20-year and 30-year notes and bonds of 2.8% (Office of Management and Budget, 2008).

The cost model also estimates the impact of changes in site characteristics and design parameters. Using the template site as a baseline condition, site characteristics and design parameters (e.g., depth to groundwater, contaminant plume width, and groundwater velocity) were varied individually and the twelve iterations are shown in **Table 7-1**. This specific analysis provides some insight into how capital, O&M, and long-term monitoring costs are affected by changing specific variables.

The base case assumes a homogenous silty sand aquifer from a depth of 3 meters (m) (approximately 10 feet [ft]) below ground surface to 12 m (40 ft) below ground surface with a hydraulic conductivity of 0.001 cm/sec, a horizontal gradient of 0.008 m/m and a porosity of 0.25. These aquifer characteristics result in a groundwater seepage velocity of approximately 10 m/year (yr) (33 ft/yr)}. The plume of perchlorate-impacted groundwater extends along the direction of groundwater flow for 240 m (800 ft) and is 120 m (400 ft) in width. The concentration of perchlorate at the upgradient side of the plume is 2 mg/L and the concentration on the downgradient side is 1.1 mg/L. Oxygen and nitrate will contribute demand for electron donor and the assumed concentrations of dissolved oxygen and nitrate are 5 mg/L and 15 mg/L respectively.

The base case also assumes that two pore volumes of clean water will need to flush through the impacted areas to achieve the clean-up objectives. In reality, the number of pore volumes of clean water required to flush through the subsurface to achieve target treatment objectives will be determined by a number of factors, such the degree of heterogeneity of the geological media. Variations in the K of the aquifer material can allow significant mass of perchlorate to diffuse into low K layers and then act as an ongoing source of perchlorate to the higher K zone as the perchlorate is flushed from the higher K zones. In most geological settings, more than two pore volumes will be required to achieve treatment objectives and longer-term operation of the remedial measures will be required. The assumption that two pore volumes of flushing are required to achieve treatment objectives could only be valid for situations where there is very uniform K of the geological media and is likely an optimistic assumption for most real world situations.

The base case design incorporates one biobarrier on the downgradient edge of the plume to treat water as it flows across the line of the biobarrier. Based on the groundwater seepage velocity of 10 m/yr (33 ft/yr), a plume that extends for 240 m (800 ft) along the direction of groundwater flow and the assumed need to flush two pore volumes of clean water through the impacted aquifer to achieve clean-up standards, it would be expected to take approximately 48 years for the plume to be treated in the base case. If more than two pore volumes of flushing are actually required to achieve treatment objectives, the biobarrier would need to be operated beyond the 30-year time frame considered in this costing exercise but the concentrations to be treated would likely be reduced significantly and operating requirements reduced. The costs of this potential future operation would be incurred more than 30 years into the future and the NPV of these costs would not be as significant as the costs incurred for operation in the near and medium term (i.e., less than 30 years).

The perchlorate treatment objective that was used for the template site was based on the chronic exposure reference dose (and the resulting drinking water equivalent concentration) selected by the U.S. Environmental Protection Agency in 2005 (http://www.epa.gov/iris/subst/1007.htm) of 24.5 µg/L (0.0245 mg/L). A lower treatment objective would increase the costs associated with the implementation of the approaches presented here.

The active bioremediation approach considered can achieve low treatment criteria (i.e., below 0.004 mg/L) but to achieve lower target treatment criteria, a higher safety factor will be required in the design and operation of each of the remedies such that pockets or layers of low K geological material containing untreated groundwater with some perchlorate do not remain or transmit perchlorate in groundwater following treatment and the system may need to be operated for a longer period of time. If a very low target treatment objective is required, even small pockets or layers of untreated groundwater could result in groundwater samples exceeding the target criteria. Layers of low K geological material exist at many sites where inter-bedded clay, silts, and sands are present and can serve as longer term repositories for perchlorate from which diffusion is the dominant transport mechanism. These pockets or layers may release perchlorate to flowing groundwater after treatment of perchlorate in the higher K units has been completed.

As discussed above, the presence of significant low K repositories of perchlorate and low target treatment concentrations would affect the assumption used in the base case that two pore volumes of groundwater need to be flushed through the plume to achieve the target treatment objectives. If additional clean groundwater needs to be flushed through the plume area to achieve remedial action objectives then the treatment system will need to be operated for a longer period of time and incur additional long-term O&M and monitoring costs. The additional safety factor in design and possibly longer-term operation will increase costs to achieve lower target treatment objectives but the impact of a specific change in the target treatment concentration is difficult to predict without extensive and very detailed site characterization and contaminant transport modeling.

The active biobarrier alternative assumes that a series of injection and extraction wells will be installed along the alignment of the biobarrier and a groundwater recirculation system will be constructed to recirculate groundwater and distribute electron donor across the biobarrier. Groundwater will be recirculated between injection and extraction wells and a soluble electron donor will be added to the water being recirculated to distribute the electron donor across the plume of perchlorate impacted groundwater. For the purpose of this cost model it is assumed that this initial system installation is the same as would be used for a semi-passive approach to the addition of electron donor. The costing has been developed based on circulating groundwater and adding electron on a continuous basis. The operating costs would be higher than for a semi-passive system as a result of the increased operating requirements and increased potential for biofouling of injection wells.

The other EISB approaches considered here include: passive electron donor injection, semi-passive electron donor injection, and a trench biowall. The passive EISB system assumes that a series of injection wells are installed across the plume and that emulsified vegetable oil (EVO) is injected into these wells every three years. The semi-passive system would be set up in a manner almost identical to the active system but would be operated on an intermittent rather than a continuous basis. The trench biowall EISB system assumes that a trench is excavated to intercept the plume of perchlorate-impacted groundwater and is backfilled with mulch and EVO. It is assumed that the biowall is rejuvenated by injecting additional EVO after 4 and 8 years and every 3 years thereafter.

The groundwater extraction and treatment or pump and treat system included for comparison would be similar to the biobarrier system in that a row of extraction and injection wells would be used to bring groundwater to the surface and to re-inject the groundwater but rather than amending the groundwater with electron donor the groundwater would be treated to remove perchlorate prior to reinjection on a continuous basis. The groundwater treatment component of this system would be a small-scale bioreactor to degrade perchlorate.

A series of twelve variations in site conditions and/or design parameters were developed and the cost implications of these variations on the active EISB system were estimated. The first variation of the base case, Case 2: Accelerated Clean Up Case, utilizes five biobarriers aligned perpendicular to the direction of groundwater flow distributed every 48 m (160 ft) within the 240

m (800 ft) long plume. This will provide treatment of the plume at one downgradient and four intermediate locations rather than just at the downgradient edge of the plume. Based on the seepage velocity of 10 m/yr (33 ft/yr) and the assumption that two pore volumes of clean water need to flow through the plume area to achieve clean up, this case will require approximately 10 years to treat the groundwater rather than the 48 years of the base case.

The 3rd and 4th cases incorporate reduced and elevated concentrations of perchlorate in groundwater as shown in **Table 7-1**. The 5th and 6th cases assume lower and higher concentrations of nitrate and dissolved oxygen that will result in a higher and lower demand for electron donor. The 7th and 8th cases incorporate lower and higher groundwater seepage velocities resulting from changes in the hydraulic gradient from the base case. The 9th case assumes that the depth to groundwater is 30 m (100 ft) rather than the 3 m (10 ft) in the base case. The 10th and 11th cases assume thin and thick vertical interval of 3 m (10 ft) and 15 m (50 ft) rather than the 9 m (30 ft) of the base case. The 12th and 13th case assume a narrow plume (30 m [100 ft] in width) and a wide plume (240 m [800 ft] in width) rather than the 120 m (400 ft) width of the base case.

The costs of the base case and the variations are discussed in Section 7.3.

7.2 Cost Drivers

The costs to implement EISB for perchlorate impacted groundwater using the active approach for the addition of electron donor will vary significantly from site to site. The key costs drivers are listed below followed by a brief discussion of the impact on cost.

- **Width of Plume (perpendicular to the direction of groundwater flow)** – Treatment systems for wider plumes require more recirculation wells, equipment, electron donor and labor to operate. Some system costs, such as design and mobilization will be relatively insensitive to the size of a system but many costs will increase in direct proportion with an increase in the width of the area to be treated.

- **Length of Plume to be Treated** – Treatment systems may be designed to treat the entire length of a plume in a shorter time period by installing recirculation wells at many locations along the length of the plume or they may be designed to treat a plume over a longer period of time as the groundwater flows through a few biobarriers aligned perpendicular to the direction of groundwater flow. In either case, the costs will be higher for plumes of greater length. Systems designed to treat plumes quickly will require more recirculation wells, more equipment, more electron donor and more labor to operate than systems designed to treat perchlorate over a longer period of time. Systems designed to treat plumes as they flow through a small number of biobarriers will need to operate for longer periods of time if the plume to be treated has a greater length.

- **Vertical thickness of the area of impacted groundwater** – Systems designed to treat plumes with a greater vertical thickness will be more expensive as they will require

longer screen in the recirculation wells, higher capacity pumps, piping and other equipment, more electron donor and some additional labor to operate. As with the length of the plume, some system costs, such as design and mobilization costs, will be relatively insensitive to the size of a system but many costs will increase in direct proportion with an increase in the vertical thickness of the area to be treated.

- **Depth of the interval to be treated** – System designed to treat perchlorate at greater depths will be somewhat more expensive than shallow plumes as a result of the higher costs of installation recirculation wells. Most other capital and operating costs will not be impacted greatly by the need to treat deeper plumes of perchlorate impacted groundwater.

- **The area of the plume of impacted groundwater to be treated** – As discussed above, systems may be designed to treat the entire length of a plume on a short time frame by installing recirculation wells at many locations along the length of the plume or they may be designed to treat a plume over a longer period of time as the groundwater flows through a few biobarriers aligned perpendicular to the direction of groundwater flow. Treating the entire plume will increase the initial capital costs relative to treating the plume as water flows through a small number of biobarriers but the long-term costs will be less because treatment will be completed over a shorter period of time.

- **Ambient groundwater velocity** – Systems design to treat higher ambient groundwater velocities will be more expensive because: higher groundwater recirculation rates or additional recirculation wells will likely be required to distribute electron donor across the width of the plume and the higher groundwater velocities will result in greater demand for electron donor as higher quantities of perchlorate and other electron acceptors will be flowing through the target treatment zone. A higher groundwater velocity will, however, usually allow for clean-up criteria to be achieved in a shorter period of time as water flows faster through the impacted geological media.

- **Hydraulic conductivity (K) of the geological media containing the impacted groundwater** – Sites with a high K will generally have high groundwater velocities and associated higher costs as discussed above. Systems at low K sites will generally be less expensive because of the lower groundwater velocity but the amount of the costs savings may be reduced somewhat by the need for a greater number of recirculation wells which may be required to recirculate a sufficient amount of groundwater to maintain hydraulic control.

- **The variation in the K of different layers in the geological media** – Sites with a high degree of variation in the K of different layers in the geological media will have increases costs as a result of the greater number of pore volumes of clean water required to flush through the subsurface to achieve target treatment objectives. Variations in the K of the aquifer material can allow significant mass of perchlorate to diffuse into low K layers and then act as an ongoing source of perchlorate to the higher K zone as the perchlorate is flushed from the higher K zones. The need for more pore volumes of water to flush the

subsurface will result in the need to operate the system for a longer period of time with an associated increase in OM&M costs.

- **Concentration of perchlorate in impacted groundwater** – Higher concentrations of perchlorate may not impact the initial capital costs to a large extent but will increase OM&M costs for systems in two ways. First, higher concentrations of perchlorate will require more clean water to flush the perchlorate from the geological media and therefore a longer period of operation. Second, the higher concentrations will require more electron donor to degrade the perchlorate present, although the impact of this factor may be small at most sites where the total demand for electron donor is dominated by parameters such DO, nitrate and sulfate rather than by the perchlorate concentration.

- **Target treatment concentration** – EISB can achieve low treatment criteria (i.e., below 4 µg/L) but the lower the target treatment criteria, the higher the safety factor required in the design and operation of the system so that pockets or layers of low K geological material containing untreated groundwater with some perchlorate do not remain or transmit perchlorate in groundwater following treatment. If a very low target treatment objective is required, even small pockets or layers of untreated groundwater could result in groundwater samples exceeding the target criteria and operation of the system for a long period of time may be required. Layers of low K geological material exist at many sites where inter-bedded clay, silts, and sands are present and can serve as longer term repositories for perchlorate from which diffusion is the dominant transport mechanism. These pockets or layers may release perchlorate to flowing groundwater after substantial treatment of perchlorate in the higher K units has been completed.

- **Concentration of other electron acceptors** – High concentration of other electron acceptors such as DO and nitrate will increase the amount of electron donor required to degrade perchlorate. The increased electron donor demand will increase the operating costs somewhat for the system.

7.3 Cost Analysis

The detailed breakdown of the estimated capital costs, annual O&M costs, long-term monitoring costs and the NPV of these costs for: (1) the semi-passive EISB; (2) the passive EISB; (3) the active EISB; (4) the trench biowall EISB; and (5) the equivalent P&T system are presented in the Final Report. A summary of these costs is presented in **Table 7-2**.

The capital cost, including design, installation of wells, installation of the groundwater recirculation and amendment system and system start up and testing for the active EISB system is approximately $430,000 and the annual O&M cost is estimated to be $60,000 per year. The NPV of the operation and maintenance represents an additional $1,200,000 of costs over a 30-year life. The NPV of the long-term monitoring costs is estimated to be $350,000 to give a total current value cost for the alternative of $1,980,000. The total cost of the remedy over 30 years is estimated to be $2,700,000. The cross sectional area of the plume for this scenario is 1,080

square meters (m^2) or 12,000 square feet (ft^2). The unit costs for capital and annual O&M are therefore \$398/m^2 (\$36/ft^2) and \$56/m^2 (\$5/ft^2) respectively.

The capital cost for the pump and treat alternative is \$490,000; somewhat higher than for the active biobarrier at \$430,000. The O&M costs are estimated to be \$73,000 per year versus \$60,000 for the active biobarrier. The NPV of the O&M costs for the pump and treat approach are estimated to be \$1,470,000, also higher than for the EISB alternative of \$1,200,000. The NPV of the long-term monitoring costs is estimated to be same as for the EISB alternative at \$350,000 to give a total current value cost for the alternative of \$2,310,000 versus \$1,980,000 for EISB. The total cost of the remedy over 30 years is estimated to be \$3,160,000 versus \$2,700,000 for EISB. The unit costs for capital and annual O&M for the pump and treat alternative is \$453/m^2 (\$41/ft^2) and \$68.5/m^2 (\$6.1/ft^2) respectively.

Figure 7-2 shows the cumulative costs by year for the EISB and pump and treat alternatives evaluated above.

Table 7-3 shows the estimates of the impact of variations in the site characteristics and design parameters on the costs for the EISB technology. Of the changes in site characteristics and design parameters considered in this evaluation, the most significant cost driver is the decision to accelerate the clean-up of the entire zone of perchlorate impacted groundwater rather than treating groundwater at the downgradient limit and allowing the impacted groundwater to flow through this location over time. As a result of the size of the plume a significant number of separate biobarrier systems would be required to provide sufficient coverage of the impacted groundwater to accelerate clean up.

TABLE 7-2: SUMMARY OF COSTS FOR TREATMENT OF PERCHLORATE IMPACTED GROUNDWATER
Active Perchlorate Bioremediation Demonstration

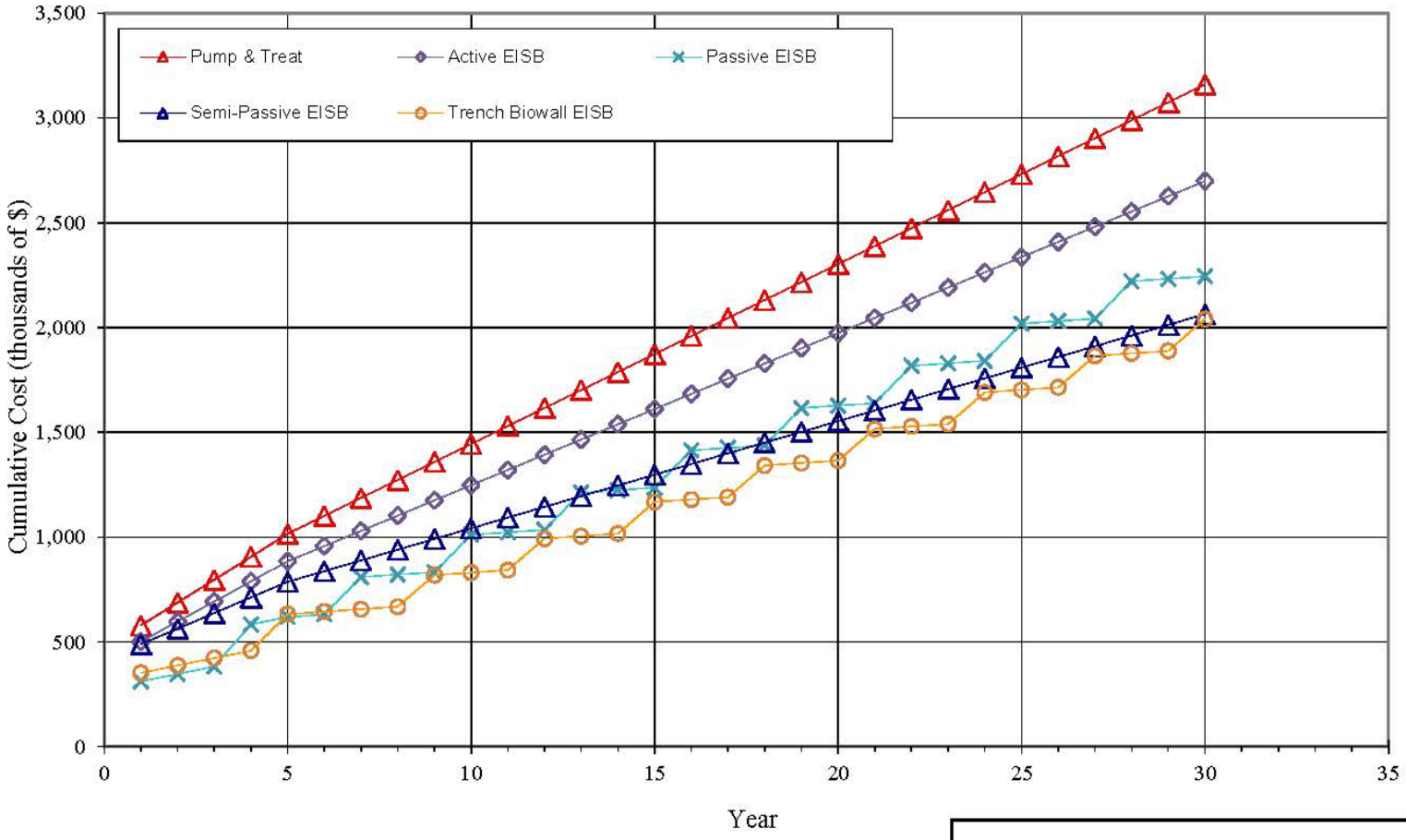
Alternative	Capital Costs	Total O&M Costs (year 1 to 30)	Average Annual O&M Costs (year 1 to 30)	NPV of 30 Years of O&M Costs	NPV of 30 Years of Monitoring Costs	NPV of 30 Years of Total Remedy Costs	Total 30-Year Remedy Costs
Semi-Passive Biobarrier	$430,000	$1,160,000	$38,700	$780,000	$350,000	$1,560,000	$2,060,000
Passive Biobarrier	$280,000	$1,500,000	$50,000	$990,000	$350,000	$1,620,000	$2,250,000
Active Biobarrier	$430,000	$1,800,000	$60,000	$1,200,000	$350,000	$1,980,000	$2,700,000
Trench Biowall	$320,000	$1,250,000	$41,700	$780,000	$350,000	$1,450,000	$2,040,000
Pump and Treat	$490,000	$2,200,000	$73,300	$1,470,000	$350,000	$2,310,000	$3,160,000
Cross Sectional Area of Biobarrier (m^2)	1,080	1,080	1,080	1,080	1,080	1,080	1,080
Cross Sectional Area of Biobarrier (ft^2)	12,000	12,000	12,000	12,000	12,000	12,000	12,000
Unit Cost Basis ($ per m^2 of biobarrier)							
Semi-Passive Biobarrier	$398	$1,100	$36	$720	$324	$1,400	$1,900
Passive Biobarrier	$259	$1,400	$46	$920	$324	$1,500	$2,100
Active Biobarrier	$398	$1,700	$56	$1,110	$324	$1,800	$2,500
Trench Biowall	$296	$1,200	$39	$720	$324	$1,300	$1,900
Pump and Treat	$454	$2,000	$68	$1,360	$324	$2,100	$2,900
Unit Cost Basis ($ per ft^2 of biobarrier)							
Semi-Passive Biobarrier	$36	$97	$3.20	$65	$29	$130	$170
Passive Biobarrier	$23	$125	$4.20	$83	$29	$140	$190
Active Biobarrier	$36	$150	$5.00	$100	$29	$170	$230
Trench Biowall	$27	$104	$3.50	$65	$29	$120	$170
Pump and Treat	$41	$183	$6.10	$123	$29	$190	$260

notes: NPV - Net Present Value; current value of future costs based on a 3% annual discount rate
O&M - Operation and Maintenance
ft^2 - square feet
m^2 - square meters

As discussed earlier in Section 7.1, the active remedial approach could be used in a modified configuration to treat source areas below the water table. This active source area treatment approach could be coupled with monitored natural attenuation (MNA) of the downgradient plume and could have the benefit of a significantly reduced time frame for operation than that of a system that simply treats a downgradient plume of perchlorate. Applying an active approach in the source area would have a higher initial capital cost and annual O&M costs but overall savings may be achieved because of a shorter duration of operation.

For example, if a source area can be treated over a period of five years with an active recirculation system costing 20% more than a single downgradient active barrier and the downgradient plume is small and can be addressed via MNA, the costs would be significantly less than for the 30 year treatment options described in Table 7-2. The capital costs for such a system would be $520,000, the annual O&M costs would be $72,000, and the system would operate for 5 years. The total NPV cost of this approach would be about $1,000,000, relative to a cost of $1,450,000 for a trench biowall, the least expensive barrier alternative, operated for 30 years.

The cost effective implementation of this approach could be limited by: (1) the size of the source area (a larger source area would require additional costs to treat); and (2) the agreement of stakeholders to allow the downgradient plume of perchlorate to be addressed via MNA.



Notes: EISB - Enhanced *In Situ* Bioremediation

Cumulative Costs for Perchlorate Treatment
Active Perchlorate Bioremediation Demonstration

Geosyntec consultants

Guelph | August 2012

Figure 7-2

P:\PM\Projects\ER0156_ESTCP_perchlorate\Task 6 - Reporting\2012-07-Aerojet Report\Costing\[Chapter 7 tables and figures-2012-07-10.xls]F7-1-Graph of Costs

TABLE 7-3: IMPACT OF SITE CHARACTERISTICS AND DESIGN PARAMETERS ON COSTS FOR ACTIVE EISB
Active Perchlorate Bioremediation Demonstration

Cost Component	Base Case	Accelerated Clean Up Case		Low Perchlorate Concentration Case		High Perchlorate Concentration Case		Low Donor Demand Case		High Donor Demand Case		Low GW Velocity Case	
	Case 1	Case 2		Case 3		Case 4		Case 5		Case 6		Case 7	
	Cost	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost
Capital Cost	$430,000	4.50	$1,935,000	0.98	$421,400	1.05	$451,500	0.95	$408,500	1.15	$494,500	0.90	$387,000
NPV of O&M Costs	$1,200,000	1.75	$2,100,000	0.95	$1,140,000	1.05	$1,260,000	0.90	$1,080,000	1.15	$1,380,000	0.90	$1,080,000
NPV of Monitoring Costs	$350,000	1.25	$437,500	1.00	$350,000	1.00	$350,000	1.00	$350,000	1.00	$350,000	1.00	$350,000
NPV of Total Costs	$1,980,000	2.26	$4,472,500	0.97	$1,911,400	1.04	$2,061,500	0.93	$1,838,500	1.12	$2,224,500	0.92	$1,817,000

Cost Component	High GW Velocity Case		Deep GW Case		Thin Interval Case		Thick Interval Case		Narrow Plume Case		Wide Plume Case	
	Case 8		Case 9		Case 10		Case 11		Case 12		Case 13	
	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost	Factor	Cost
Capital Cost	1.15	$494,500	1.25	$537,500	0.90	$387,000	1.15	$494,500	0.35	$150,500	1.85	$795,500
NPV of O&M Costs	1.10	$1,320,000	1.00	$1,200,000	0.90	$1,080,000	1.15	$1,380,000	0.45	$540,000	1.75	$2,100,000
NPV of Monitoring Costs	0.90	$315,000	1.00	$350,000	1.00	$350,000	1.00	$350,000	0.50	$175,000	1.50	$525,000
NPV of Total Costs	1.08	$2,129,500	1.05	$2,087,500	0.92	$1,817,000	1.12	$2,224,500	0.44	$865,500	1.73	$3,420,500

notes: All costs are in thousands of dollars
Factor - factor increase or decrease in costs relative to the Base Case
NF - not feasible, costs not estimated
NPV - Net Present Value
O&M - Operation and Maintenance
EISB - Enhanced *In Situ* Bioremediation

8. IMPLEMENTATION ISSUES

This section describes implementation issues with EISB using active addition of electron donor to treat perchlorate impacted groundwater.

8.1 Additional Sources of Information

Many guidance documents are available from organizations such as US EPA, Interstate Technology & Regulatory Council (ITRC), and Air Force Centre for Engineering and the Environment (AFCEE) dealing with EISB for perchlorate and chlorinated solvents. Many design issues with EISB for chlorinated solvents are also common to perchlorate. A list of recent relevant guidance documents is presented below:

- SERDP ESTCP Environmental Technology Series. H.F. Stroo and H.C. Ward Editors. 2009. *In Situ* Bioremediation of Perchlorate in Groundwater. Springer Publishing Company. http://www.springer.com/environment/environmental+management/book/978-0-387-84920-1

- Interstate Technology & Regulatory Council (ITRC) Perchlorate Team. 2005. Perchlorate: Overview of Issues, Status, and Remedial Options. September 2005. http://www.itrcweb.org/Documents/PERC-1.pdf

- Interstate Technology & Regulatory Council (ITRC) Perchlorate Team. 2008. Remediation Technologies for Perchlorate Contamination in Water and Soil. March 2008. http://www.itrcweb.org/Documents/PERC-2.pdf

- Interstate Technology & Regulatory Council (ITRC) Bioremediation of DNAPLs Team. 2008. In Situ Bioremediation and Chlorinated Ethene: DNAPL Source Zones. June 2008. http://www.itrcweb.org/Documents/bioDNPL_Docs/BioDNAPL3.pdf

- Interstate Technology & Regulatory Council (ITRC) Enhanced Attenuation: Chlorinated Organics Team. 2008. Enhanced Attenuation: Chlorinated Organics. April 2008 http://www.itrcweb.org/Documents/EACO-1.pdf

- Interstate Technology & Regulatory Council (ITRC) In Situ Bioremediation Team. 2002. A Systematic Approach to In Situ Bioremediation in Groundwater. April 2002 http://www.itrcweb.org/Documents/ISB-8.pdf

- Permeable Reactive Barriers: Lessons Learned/New Directions. 2005. Interstate Technology & Regulatory Council (ITRC) Permeable Reactive Barrier Team. February 2005 http://www.itrcweb.org/Documents/PRB-4.pdf

- Solutions EIS. 2006. Protocol for Enhanced In Situ Bioremediation Using Emulsified Vegetable Oil. Prepared for ESTCP. May

2006. http://www.estcp.org/viewfile.cfm?Doc=ER%2D0221%20Final%20Protocol%20V2%2Epdf

- US EPA. 2005. Perchlorate Treatment Technology Update – US EPA Federal Facilities Forum Issue Paper. US EPA – Solid Waste and Emergence Response. May 2005. http://www.clu-in.org/download/remed/542-r-05-015.pdf

- US Air Force. 2007. Protocol for In Situ Bioremediation of Chlorinated Solvents Using Edible Oil. Prepared for Air Force Center for Engineering and the Environment (AFCEE) - Environmental Science Division – Technology Transfer Outreach Office. October 2007. http://www.clu-in.org/download/remed/Final-Edible-Oil-Protocol-October-2007.pdf

- Hoponick, J. R. 2006. Status Report on Innovative In Situ Remediation Technologies Available to Treat Perchlorate-Contaminated Groundwater. Prepared for US EPA – Office of Superfund Remediation & Technology Innovation – Technology Innovation & Field Services Division. August 2006. http://www.clu-in.org/download/studentpapers/J_Hoponick_Final.pdf

8.2 Potential Environmental Issues

8.2.1 Regulatory Issues

The implementation of EISB in most jurisdictions requires a groundwater reinjection permit. This permit must allow for extraction of groundwater, amendment with electron donor, and reinjection of the mixture. It is not normally difficult to obtain permits to implement such a program because: (1) the groundwater that will be extracted will be reinjected close to where it was extracted; (2) electron donors normally consist of innocuous organic compounds; and (3) bioaugmentation (addition of a microbiological culture) is seldom required for EISB for treatment of perchlorate.

Additional permits or other regulatory approvals may be if flammable electron donors, such as ethanol, are used or if chlorine gas is used to clean injection well screens.

8.2.2 Air Discharge

The EISB process described will not normally result in discharge of chemicals to the atmosphere.

8.2.3 Wastewater Discharge

The EISB process described will not normally result in the generation of wastewater streams. Extracted groundwater is normally re-injected into the injection wells. Some small quantities of

wastewater may be generated during well installation and groundwater sampling events and must be managed as they would be for other investigation derived waste.

8.2.4 Waste Storage, Treatment, and Disposal

The EISB process described will not normally result in the generation of significant waste streams. Some waste may be generated during well installation and must be managed as they would be for other investigation derived waste.

8.3 End-User Issues

Potential end-users of this technology include responsible parties for contaminated sites where perchlorate is present in groundwater. End-users will have an interest in the technology because it can potentially treat groundwater *in situ* at an overall cost much less than for conventional pump and treat remediation approaches. End-users and other stakeholders may have concerns regarding: (1) the effectiveness of the technology in reducing concentrations of target compounds below appropriate criteria; (2) potential negative impacts of excess electron donor on water quality downgradient of the treatment zone; and (3) potential negative impacts of the electron donor addition on secondary water characteristics.

8.4 Procurement Issues

There are no specialized equipment components required to implement EISB using the active approach and no specialized services required. There are no significant procurement issues with the application of this technology.

8.5 Design Issues

Based on the results of the demonstration conducted at the IRCTS and a review of other applications of the technology, potential design issue to be considered in the development of the design of active EISB systems were identified. These design issues are discussed below.

- **Sites with a low hydraulic conductivity** – It can be difficult to obtain high groundwater recirculation rates at sites where the hydraulic conductivity is low and therefore longer periods of time are required to distribute electron donor between injection and extraction wells. Sites with a low hydraulic conductivity also normally have a low groundwater velocity and therefore it will take a significant period of before electron donor or the impacts of electron donor move downgradient from the biobarrier.

- **Sites with significant variations in hydraulic conductivity** – It can be difficult or impossible to obtain a uniform distribution of electron donor at sites where there are significant variations in the hydraulic conductivity (i.e., significant interbedding of low K units). Electron donor will migrate much faster and further in higher K zones than in low

K zones making it difficult to obtain uniform distribution of electron donor, however, because the flux of groundwater and of perchlorate in the higher K zones is higher than in low K zones, these higher K zones require more electron donor to degrade the perchlorate.

- **Sites with high concentrations of competing electron acceptors** – The requirements for electron donor will be high at sites with high concentrations of competing electron acceptors such as DO and nitrate in the groundwater. Costs for electron donor will be higher at these sites that at sites with low concentrations of competing electron acceptors.

- **Sites with high concentrations of naturally occurring metals in the soil** – Groundwater monitoring should be conducted following addition of electron donor at sites with high concentrations of naturally occurring metals in the soil to make sure that the addition of electron donor does not result in the mobilization of significant concentrations of metals to areas downgradient of where the electron donor is injected. Modest amounts of electron donor should be added initially to evaluate the potential to mobilize metals such as iron and manganese. Active approaches to EISB will have less potential to mobilize naturally occurring metals downgradient of the biobarrier than semi-passive or passive EISB approaches.

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APPENDIX A

POINTS OF CONTACTS

TABLE A-1: POINTS OF CONTACT
Active Perchlorate Bioremediation Demonstration

Point of Contact	Organization	Phone/Fax/E-mail	Role in Project
Rodney Fricke	Aerojet	(916) 355-5161 FAX (916) 355-6145 rodney.fricke@aerojet.com	Project Manager, Aerojet Site Remediation
Evan Cox	Geosyntec Consultants	(519) 822-2230 Ext. 237 Fax (519) 822-3151 ecox@geosyntec.com	Principal Investigator
Tom Krug	Geosyntec Consultants	(519) 822-2230 Ext. 242 Fax (519) 822-3151 tkrug@geosyntec.com	Co-Principal Investigator
Jamey Rosen	Geosyntec Consultants	(519) 822-2230 Ext. 226 Fax (519) 822-3151 jrosen@geosyntec.com	Project Manager

APPENDIX B

HYDRAULIC ANALYSIS AND DESIGN

D R A F T
M E M O R A N D U M

TO: Rodney Fricke, Aerojet

FROM: E. Cox, J. Gallinatti, J. Rosen, GeoSyntec Consultants

DATE: 19 February 2003

SUBJECT: Final Extraction Well Design for WNN In-Situ Bioremediation Pilot Project

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GeoSyntec Consultants, Inc. (GeoSyntec) has been retained by Aerojet General Corporation (Aerojet) and The Boeing Company (Boeing) to conduct a pilot test of in situ bioremediation of perchlorate and trichloroethene (TCE) within the WNN Easement (the Site) in Rancho Cordova, California (Figure 1). The proposed pilot project utilizes an active in-situ biobarrier oriented perpendicular to groundwater flow. Groundwater will be extracted via two extraction wells (EW-1 and EW-2), amended with soluble electron donors (e.g., ethanol or citric acid), and recharged back to the aquifer via a recharge well (RW-1) for in-situ treatment (Figure 2).

Two pumping tests (step-drawdown, and constant rate) were performed at RW-1 during January 2003 by GeoTrans, Inc. (GeoTrans). Results of the pumping tests have been used to refine the layout and design flow rates for the pilot project extraction and recharge system. The following discussion presents our analysis of the pumping tests, numerical model simulations of the pilot project steady state flow field, and modifications to the extraction well locations and flow rates.

Step-Drawdown Pumping Test

The step-drawdown pumping test consisted of five sequential 2-hour periods of constant rate pumping at increasingly higher pumping rates. The step-drawdown

test results were as follows:

Discharge (gpm)	**Drawdown** (ft)	**Specific Capacity** (gpm/ft)
30	3.3	9.1
60	6.5	9.2
90	8.9	10.1
150	15	10.0
200	20.3	9.9

The relatively constant values of specific capacity indicate a linear relation between discharge and drawdown and suggest an efficient well for the discharge rates of the test. A specific capacity of 10 gallons per minute per foot of drawdown (gpm/ft) typically indicates a transmissivity of approximately 2,700 feet^2/day.

Recharge Well Capacity

According to Driscoll (1986[1]), the addition of positive head (water level) in a recharge well should not exceed one-fifth (0.2) of the depth from ground surface to the top of screen in order to minimize the potential for fracturing the formation and/or damaging the hydraulic conductivity of the aquifer. For RW-1, the additional water level would be 28 feet since the top of the screen is 140 feet below ground (140 * 0.2). Using the specific capacity of 10 gpm/ft, RW-1 might be capable of receiving approximately 280 gpm with the 28-foot rise in water level. However, the capacity of a recharge well is not typically equal to an extraction well because fine-grained materials (sediments, precipitates), air bubbles, and bacteria can plug the screen and reduce the capacity of the recharge well. Driscoll (1986) suggests that recharge wells should be constructed with twice as much screen as extraction wells; and Aerojet has reported that recharge rates are typically one-half extraction rates. As such, the estimated recharge capacity of RW-1 will be assumed to be 140 gpm for planning purposes.

[1] Driscoll, F. G., Groundwater and Wells, Johnson Division, St. Paul, Minn. 55112, 1986.

Constant Rate Pumping Test

A constant rate pumping test in RW-1 was run at an average rate of 151 gpm for 25.5 hours. Drawdown recorded in monitoring wells MW-1 and STSW-138A were analyzed to estimate hydraulic parameters of the aquifer. The Cooper-Jacob straight line method (Figures 3 and 4) was matched to early-time data and yielded the following parameters. Aquifer thickness based on the geophysical log of RW-1 is 40 feet.

Well	**Transmissivity** (ft^2/day)	**Hydraulic Conductivity** (ft/day)	**Storativity**
MW-1	2,590	65	1.72e-4
STSW-138A	2,910	73	1e-4

When the same results are compared to the standard Theis curve (the theoretical pump test response in an uniform, confined aquifer), the late-time data fall below the curve, indicative of water gain from the underlying and/or overlying units ("leaky" aquifer). Therefore, the Hantush method to analyze leaky aquifers was applied, and this analysis yielded the following parameter ranges (Figures 5 and 6):

Well	**Transmissivity** (ft^2/day)	**Hydraulic Conductivity** (ft/day)	**Storativity**	**Leakance** (day^{-1})
MW-1	2,600 – 4,000	65 - 100	1.62e-4	0.005
STSW-138A	2,910	72	1.04e-4	0.005

Numerical Simulation of Flow Field

A numerical groundwater flow model was previously created with Visual MODFLOW^{TM} to simulate the pilot project flow conditions[2]. The model was set up to encompass a horizontal domain of 4,000 by 10,000 feet using a variable grid with cell dimensions between 20 and 150 feet, and a vertical domain between 150 and –150 feet below mean sea level (msl) using 11 layers to provide appropriate discretization. The thickness of these unit vary from 11 to 60 feet.

Prior to the availability of site-specific hydraulic data, the previous model utilized a transmissivity of 4,920 ft^2/day for the aquifer (thickness of 60 feet, hydraulic conductivity of 82 ft/day). Based on the results of the pumping tests at RW-1, the numerical model was modified to use the site-specific values of hydraulic parameters. The simulations used a transmissivity in the extraction/recharge zone of 2,600 $feet^2$/day (thickness of 40 feet, hydraulic conductivity of 65 feet/day). To simulate leakance, a 20-foot layer was defined below the pumped layer with a horizontal hydraulic conductivity of 20 feet/day and a vertical hydraulic conductivity of 0.1 feet/day (leakance of 0.005 day^{-1}).

Modifications to Extraction/Recharge System Design

The revised numerical model was used to predict the capture zones and to optimize the pumping rates of the two extraction wells and recharge via RW-1. Ideally, the zones of influence of the extraction wells will overlap with the zone of influence of the recharge well so that 20 to 40% of recharged water will be re-captured by the extraction wells. This overlap will prevent untreated water from passing through the biobarrier without being extracted, amended and recharged. As described in the workplan, a bromide (conservative) tracer will be added to the recharge water to confirm the hydraulic capture.

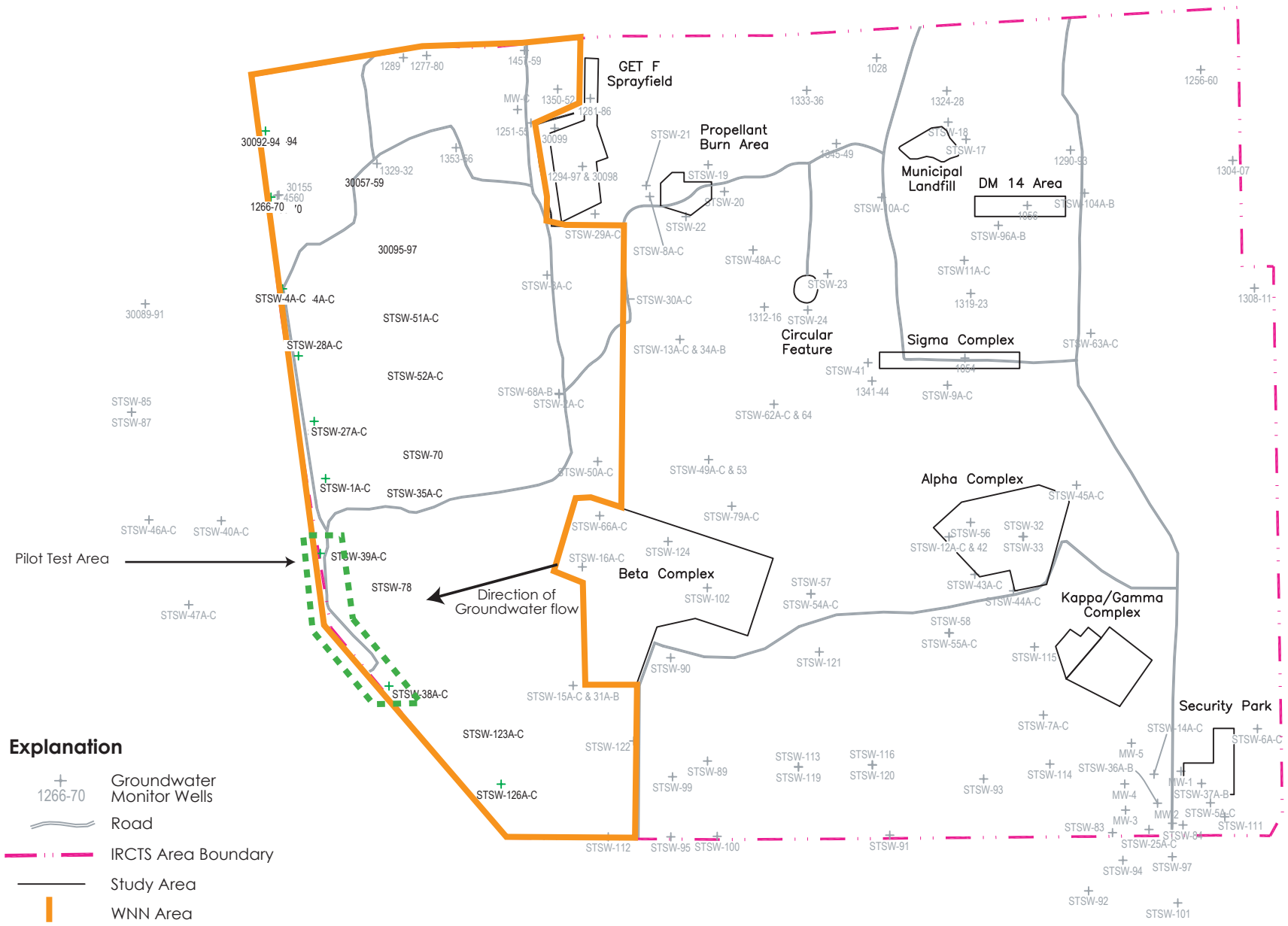
[2] GeoSyntec Consultants, Inc. , 14 June 2002, "Workplan for a Pilot Test of In Situ Bioremediation of Perchlorate and Trichloroethene in Groundwater, Inactive Rancho Cordova Test Site, Northern Groundwater Study Area."

Based on these simulations, and considering the range of hydraulic parameters and well yield (extraction and recharge), a spacing of 600 feet between extraction wells (300 feet north and 300 south of RW-1) is recommended. This spacing allows for flexibility in maintaining both adequate hydraulic capture and sufficient recirculation (overlap) by adjusting the operating flow rate as operational data is collected pertaining to well capacity, aquifer hydraulic parameters, and bromide tracer recovery. Simulations of particle tracking indicate that this configuration would create a nominal 800 foot wide biobarrier with pumping rates as low as 20 gpm per well for an extraction/recharge zone transmissivity of 2,600 $feet^2$/day (Fig. 7). However, the well capacities provide a generous factor of safety if the flow rate needs to be increased based on data collected during operations.

Based on the data from the recent site-specific pumping tests conducted by GeoTrans, the evaluation of the data by GeoSyntec, and the simulations of the steady state groundwater flow field, the following design modifications are recommended. The proposed initial flow rate is expected to be conservatively high and may be reduced if the extent of overlap is found to exceed 20%.

	Final Design (February 2003)	**Preliminary Design** (June 2002)
Extraction Well Spacing (RW-1 at center)	600 ft	1,000 ft
Initial Extraction Rate (2 wells, each)	30 gpm	77 gpm
Initial Recharge Rate (1 well)	60 gpm	154 gpm

* * * * *



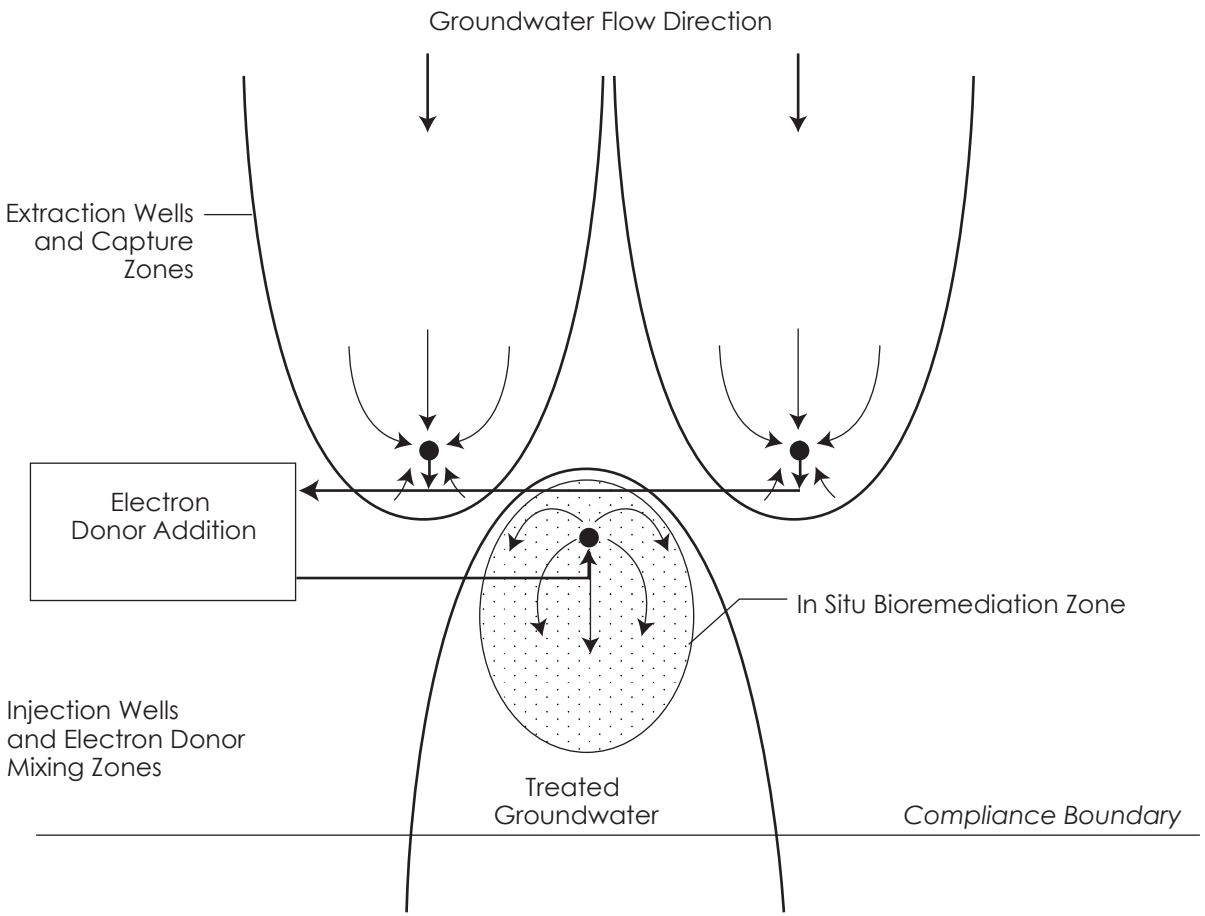
* Adapted from GeoTrans, Inc. 11-05-01

Pilot Test Area Location
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **1**

GeoSyntec Consultants

Site Plan_WNN.cdr



DRAFT

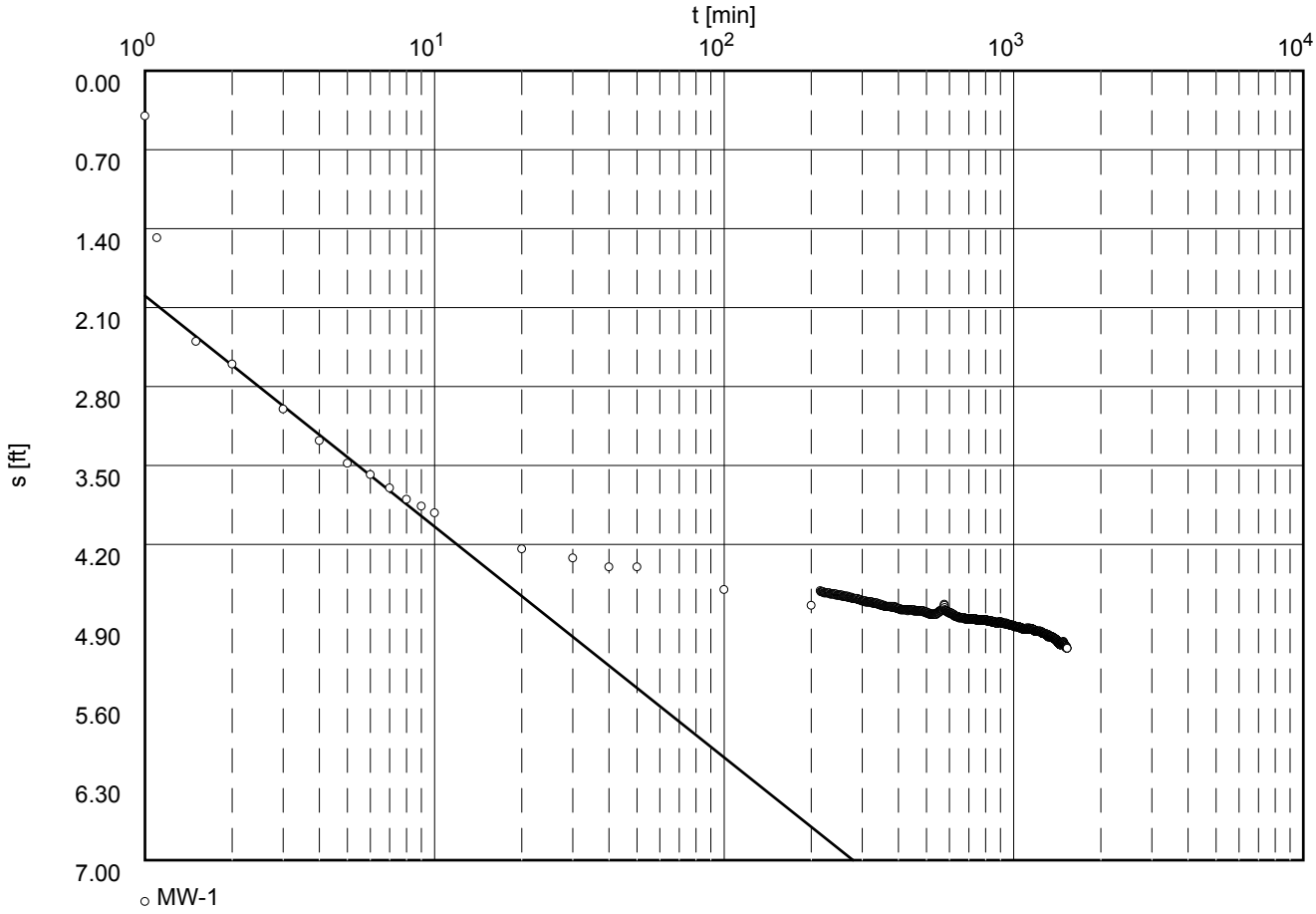
Conceptualization of Pilot Scale Active In Situ Biobarrier
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **2** | GeoSyntec Consultants

Pilot Test Conceptualization.ai

GeoSyntec Consultants 1500 Newell Ave, Ste 800 Walnut Creek, CA 94596 ph.(925)943-3034	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Confined aquifer	Date: 29.01.2003	Page 1
		Project: WNN Pilot study	
		Evaluated by: jdg	

Pumping Test No. Constant Rate RW-1 @ 151 gpm	Test conducted on: January 9-10, 2003
Observation MW-1	
Discharge 151.00 U.S.gal/min	



Transmissivity [ft²/min]: 1.80×10^{0}

Hydraulic conductivity [ft/min]: 4.51×10^{-2}

Aquifer thickness [ft]: 40.00

Storativity: 1.72×10^{-4}

DRAFT

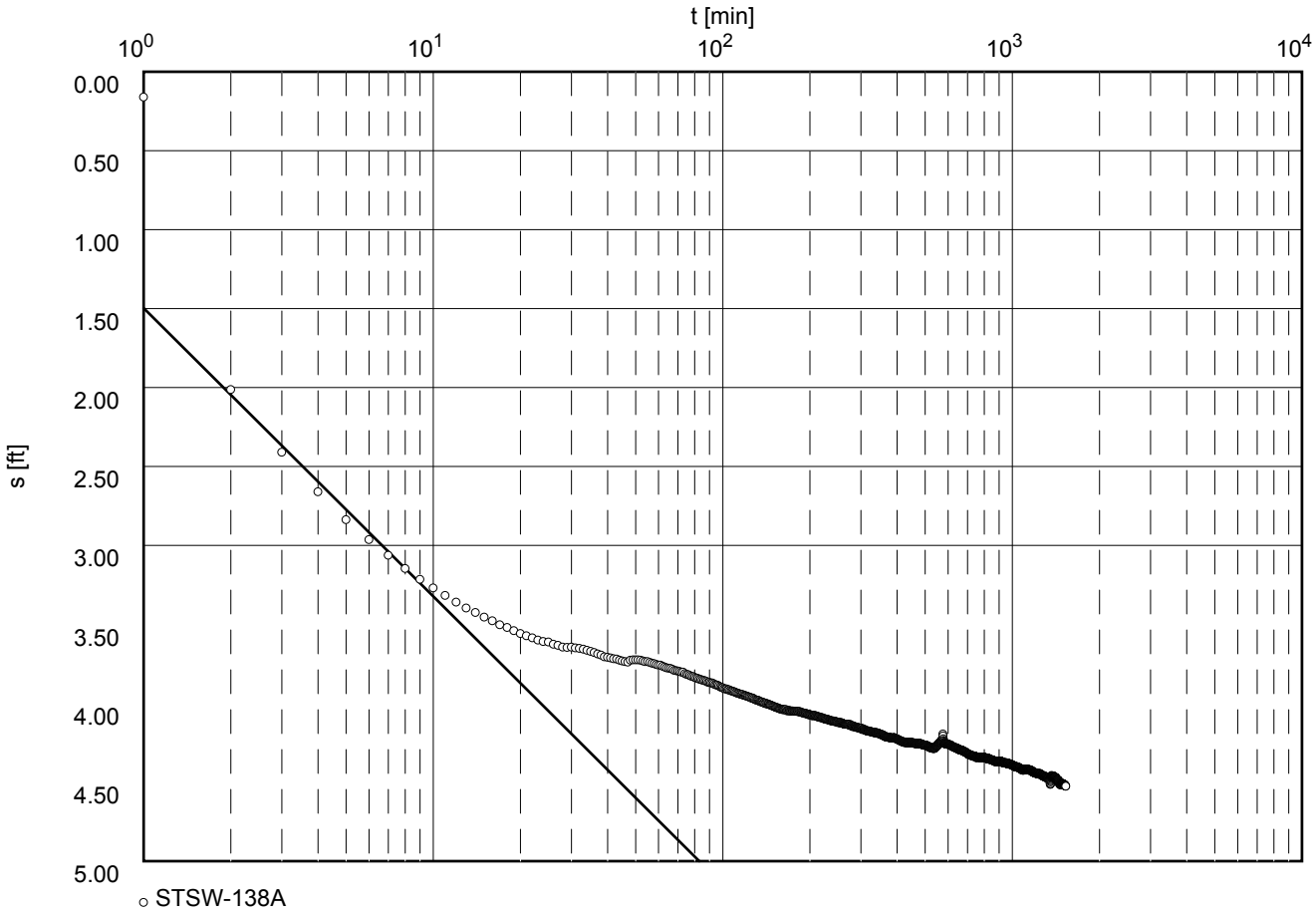
Cooper-Jacob Analysis - MW-1
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **3** | GeoSyntec Consultants

Analysis_MW-1.gli

GeoSyntec Consultants 1500 Newell Ave, Ste 800 Walnut Creek, CA 94596 ph.(925)943-3034	Pumping test analysis Time-Drawdown-method after COOPER & JACOB Confined aquifer	Date: 29.01.2003	Page 1
		Project: WNN Pilot study	
		Evaluated by: jdg	

Pumping Test No. RW-1 Constant Rate Discharge - 151 gpm	Test conducted on: January 9-10, 2003
STSW-138A Observation	
Discharge 151.00 U.S.gal/min	



Transmissivity [ft²/min]: 2.02×10^{0}

Hydraulic conductivity [ft/min]: 5.05×10^{-2}

Aquifer thickness [ft]: 40.00

Storativity: 1.00×10^{-4}

DRAFT

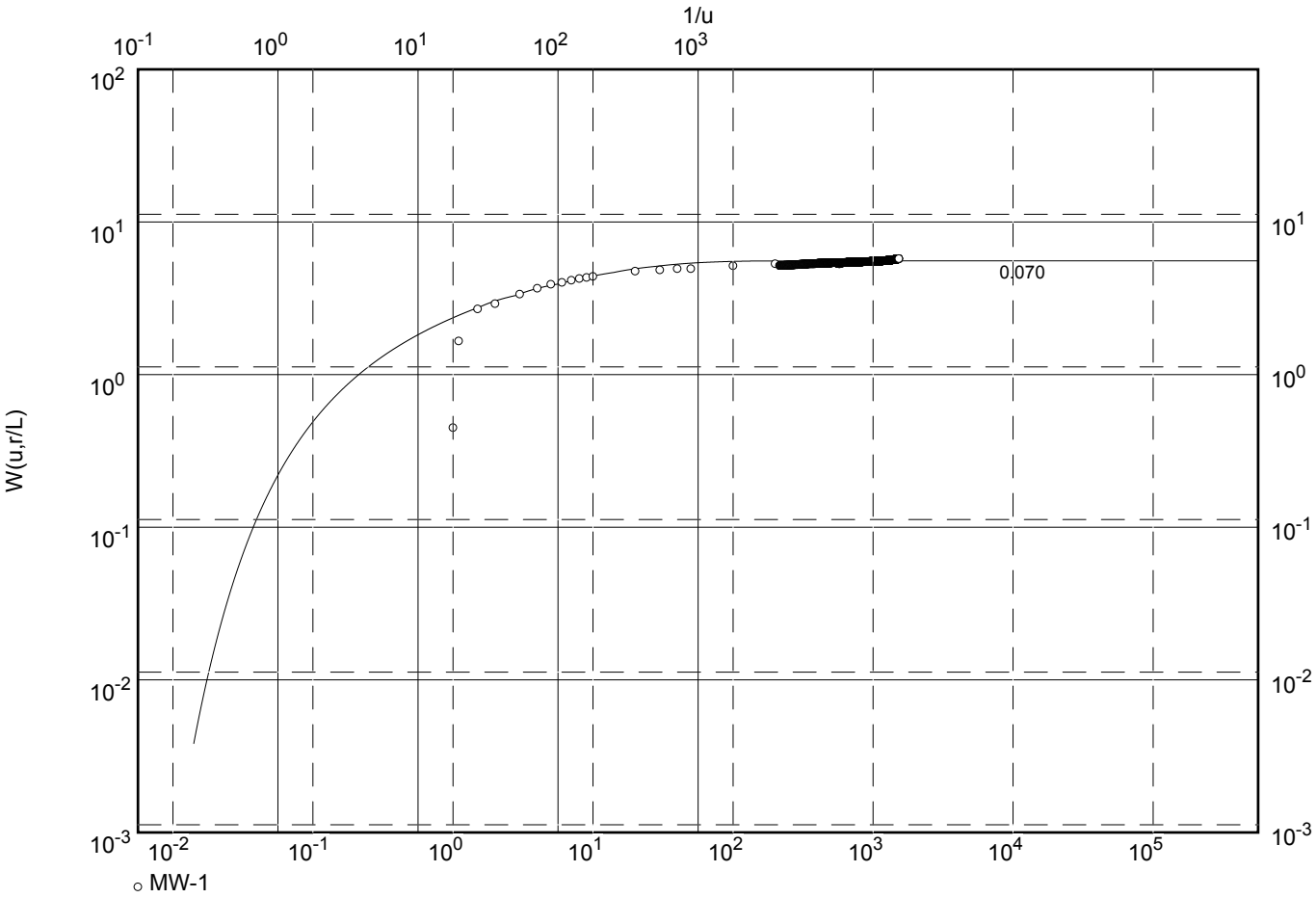
Cooper-Jacob Analysis - STSW-138a
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **4** | GeoSyntec Consultants

Analysis_STSW-138a.ai

GeoSyntec Consultants 1500 Newell Ave, Ste 800 Walnut Creek, CA 94596 ph.(925)943-3034	Pumping test analysis HANTUSH's method Leaky aquifer, no aquitard storage	Date: 29.01.2003	Page 1
		Project: WNN Pilot study	
		Evaluated by: jdg	

Pumping Test No. Constant Rate RW-1 @ 151 gpm	Test conducted on: January 9-10, 2003
Observation MW-1	
Discharge 151.00 U.S.gal/min	



Transmissivity [ft²/min]: 1.80×10^{0}

Hydraulic conductivity [ft/min]: 4.50×10^{-2}

Aquifer thickness [ft]: 40.00

Storativity: 1.62×10^{-4}

Hydraulic resistance (c) [min]: 2.83×10^{5}

DRAFT

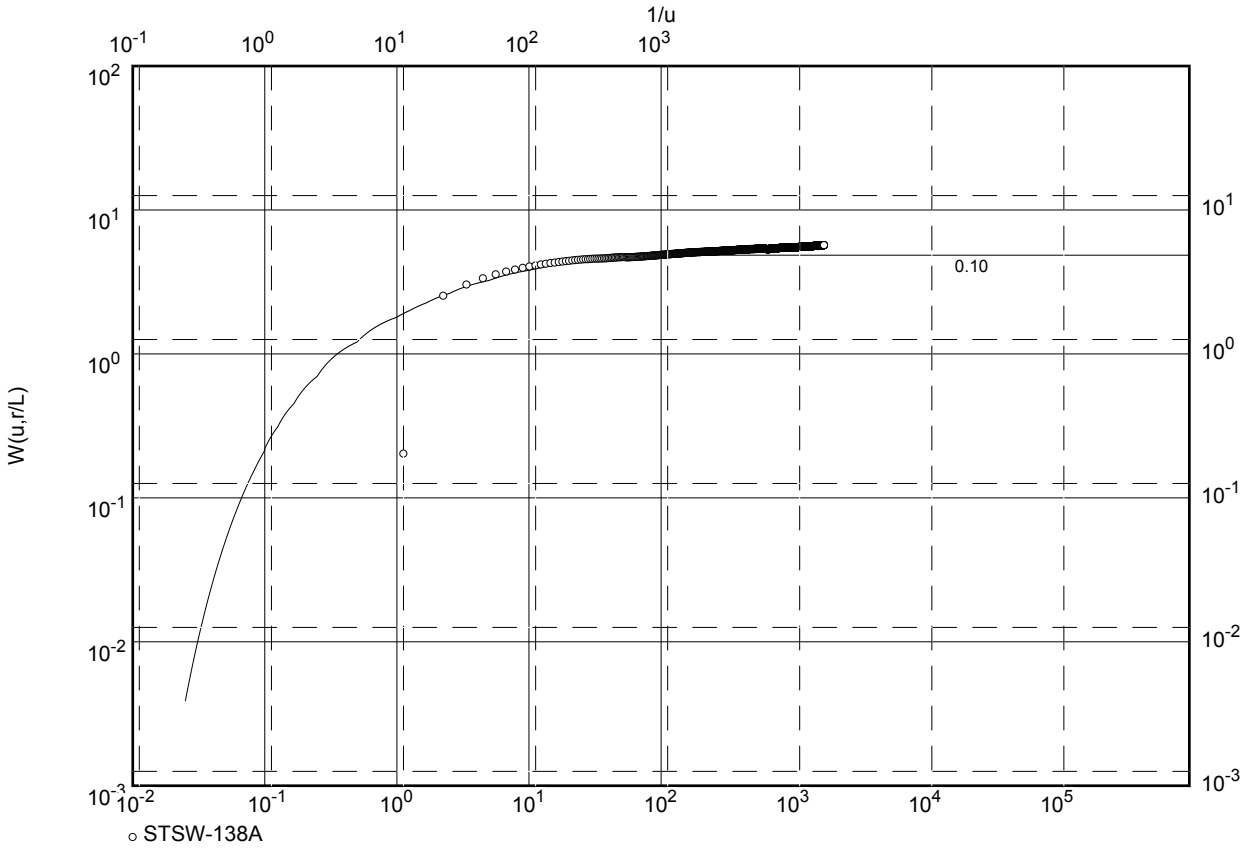
Hantush Analysis-MW-1
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: ***5*** | GeoSyntec Consultants

Hantush Analysis-MW-1.gi

GeoSyntec Consultants 1500 Newell Ave, Ste 800 Walnut Creek, CA 94596 ph.(925)943-3034	Pumping test analysis HANTUSH's method Leaky aquifer, no aquitard storage	Date: 29.01.2003	Page 1
		Project: WNN Pilot study	
		Evaluated by: jdg	

Pumping Test No. RW-1 Constant Rate Discharge - 151 gpm	Test conducted on: January 9-10, 2003
STSW-138A Observation	
Discharge 151.00 U.S.gal/min	



Transmissivity [ft²/min]: 2.02×10^{0}

Hydraulic conductivity [ft/min]: 5.05×10^{-2}

Aquifer thickness [ft]: 40.00

Storativity: 1.04×10^{-4}

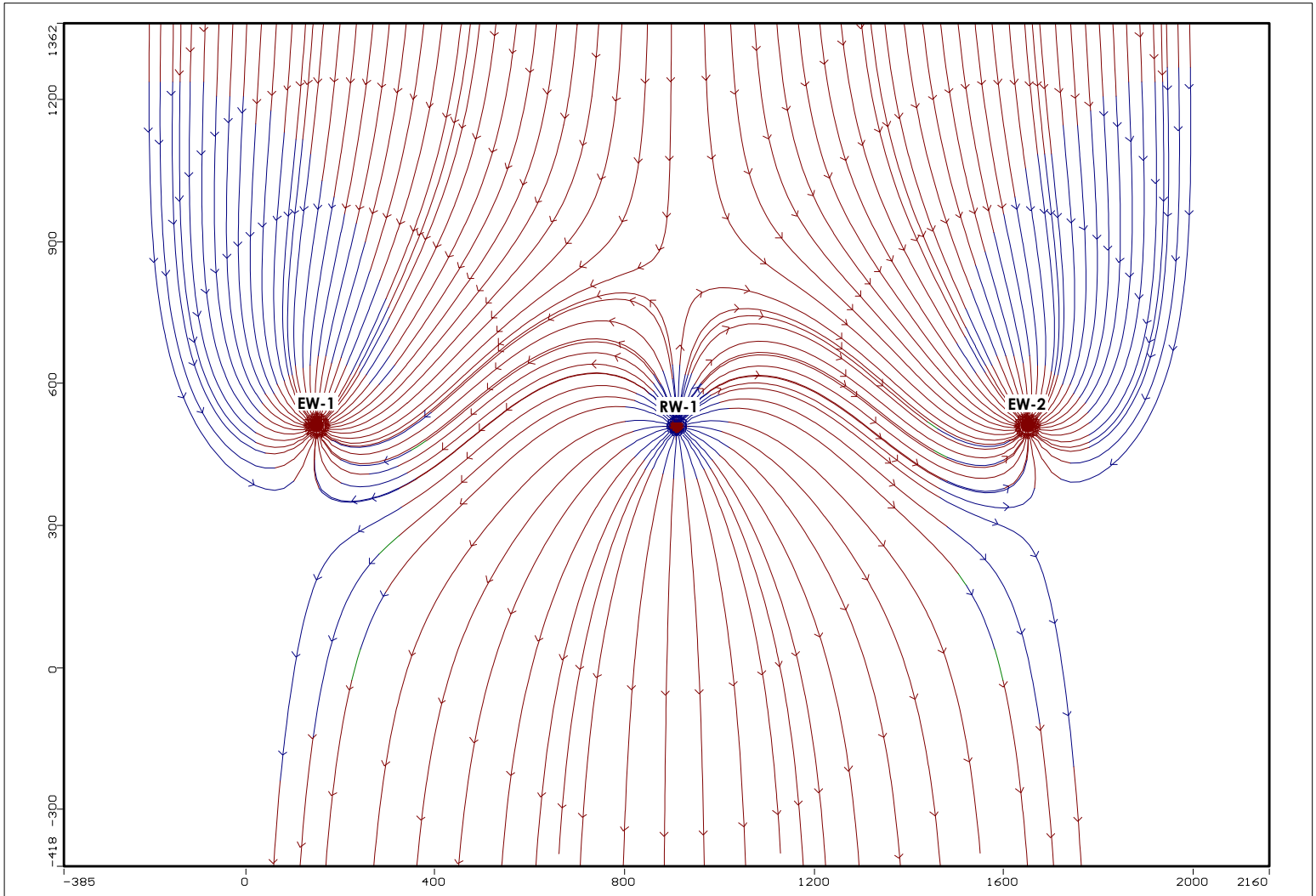
Hydraulic resistance (c) [min]: 3.40×10^{5}

DRAFT

Hantush Analysis-STSW-138a
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **6** | GeoSyntec Consultants

Hantush Analysis-STSW-138a.ai



GeoSyntec Consultants
Project: Q=120gpm;1-yr arrows
Description: WNN_Jan03_Leak_b=40.vmf
Modeller: JRosen
5 Feb 03

Visual MODFLOW v.2.8.2, (C) 1995-1999
Waterloo Hydrogeologic, Inc.
NC: 220 NR: 125 NL: 11
Current Layer: 7

1 year travel time

DRAFT

Numerical Simulation
WNN, IRCTS Pilot Test

Feb. 2003 | Figure: **7** | GeoSyntec Consultants

Numerical Simulation.ai

APPENDIX C

LABORATORY REPORTS FOR CHEMICAL ANALYSIS

Sequoia Analytical

Sequoia Analytical

819 Striker Ave Ste 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

GeoSyntec Consultants - Oakland	Project: Aerojet-WNN	S407055
475 14th St, Suite 450	Project Number: NA	**Reported:**
Oakland CA, 94612	Project Manager: Graham Bradner	07/16/04 11:14

EPA 601/602 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW1-0701-1153 (S407055-03) Water	**Sampled: 07/01/04 11:53**		**Received: 07/01/04 14:15**						
Benzene	ND	0.50	ug/l	1	4070161	07/13/04	07/13/04	EPA 624	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloromethane	**0.62**	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**2.3**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.2**	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*113 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*103 %*	*70-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Sequoia Analytical

1455 McDowell Blvd, North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
www.sequoialabs.com

Aerojet Corporation	Project:Kleinfelder/IRCTS	P409394
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	10/05/04 17:05

STSW MW-1 (P409394-05) Water Sampled: 09/20/04 12:49 Received: 09/21/04 15:30

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4100016	10/01/04	10/01/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**2.1**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*121 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*	*86-119*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Sequoia Analytical

819 Striker Ave Ste 8
Sacramento, CA 95834
(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

Aerojet	Project:IRCTS	S412029
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	12/14/04 18:26

Volatile Organic Compounds 8021B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-MN-14 (S412029-01) Water Sampled: 11/29/04 15:34 Received: 11/30/04 12:10									
Benzene	ND	0.50	ug/l	1	4120124	12/12/04	12/13/04	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**1.2**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.5**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*94 %*	*70-130*		"	"	"	"	
Surrogate: 1,2-DCA-d4		*100 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*98 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*101 %*	*70-130*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

KLEINFELDER

PROJECT NO.	PROJECT NAME	RECEIVING LAB:
42060-A01	IRCTS	SEQ

L.P. NO. (P.O. NO.):

SAMPLERS: (Signature/Number): Dan Fraser 6052

INSTRUCTIONS/REMARKS:

	DATE MM/DD/YY	SAMPLE I.D. TIME HH-MM-SS	SAMPLE I.D.	MATRIX	NO. OF CONTAINERS	TYPE OF CONTAINERS	ANALYSIS 8010	ANALYSIS SEQ 12085
1	11.29.04	1534	WNN-MN-1	W	3	VOA		-01
2		1433	STSW 138A		3			-02
3		1345	138B		3			-03
4		1202	138C		3			-04
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Dan Fraser	11.29.04 1630	Sample Control
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Sample Control	11/30/04 1135	
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)
	11/30/04 1210	

Instructions/Remarks:

12.8

Send Results To:

KLEINFELDER
3077 FITE CIRCLE
SACRAMENTO, CA 95827-1815
(916) 366-1701

Attn:

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NO 17574

Sequoia Analytical

1455 McDowell Blvd, North Ste D
Petaluma, CA 94954
(707) 792-1865
FAX (707) 792-0342
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Aerojet Corporation	Project:Kleinfelder/IRCTS	P502206
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:42060-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	02/25/05 11:32

WNN-MW-1 (P502206-01) Water Sampled: 02/07/05 11:45 Received: 02/11/05 13:20

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	5020270	02/19/05	02/19/05	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**1.2**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**3.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*85 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*83 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93 %*	*86-119*		"	"	"	"	

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Aerojet	Project:IRCTS	S508407
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	09/01/05 17:55

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN WM1 (S508407-02) Water	**Sampled: 08/15/05 11:39**	**Received: 08/18/05 11:30**							
Freon 113	ND	0.50	ug/l	1	5080372	08/29/05	08/29/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.75**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*106 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*102 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*105 %*	*70-130*		"	"	"	"	

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Aerojet	Project:IRCTS	S512394
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:42060 QT4	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	01/05/06 16:21

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-MW-1 (S512394-03) Water Sampled: 12/14/05 11:08 Received: 12/16/05 13:00									
Freon 113	ND	0.50	ug/l	1	5120433	12/27/05	12/27/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.50**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.2**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*102 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*93 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*98 %*	*70-130*		"	"	"	"	

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Aerojet	Project:IRCTS	S602282
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	03/02/06 19:51

EPA 601 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-MW1 (S602282-02) Water	**Sampled: 02/13/06 11:30**	**Received: 02/15/06 10:20**							
Bromodichloromethane	ND	0.50	ug/l	1	6020302	02/27/06	02/27/06	EPA 624	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	**0.67**	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.2**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*115 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*97 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*91 %*	*70-130*		"	"	"	"	

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Aerojet	Project: IRCTS	S605080
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: 42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	05/19/06 15:58

Perchlorate by EPA 314.0

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW166 (S605080-01) Water Sampled: 05/01/06 10:30 Received: 05/02/06 10:05									
Perchlorate	**89**	16	ug/l	4	6E10020	05/05/06	05/05/06	EPA 314.0	
STSW138A (S605080-02) Water Sampled: 05/01/06 12:28 Received: 05/02/06 10:05									
Perchlorate	**2100**	400	ug/l	100	6E10020	05/05/06	05/05/06	EPA 314.0	
WWN-MW-1 (S605080-03) Water Sampled: 05/01/06 13:15 Received: 05/02/06 10:05									
Perchlorate	ND	4.0	ug/l	1	6E10020	05/05/06	05/05/06	EPA 314.0	

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Aerojet	Project: IRCTS	S605080
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: 42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	05/19/06 15:58

Physical Parameters by APHA/ASTM/EPA Methods

Sequoia Analytical - Morgan Hill

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW166 (S605080-01) Water Sampled: 05/01/06 10:30 Received: 05/02/06 10:05									
Specific Conductivity @ 25 C	**190**	1.0	umhos/cm	1	6E08029	05/08/06	05/08/06	SM 2510B	
STSW138A (S605080-02) Water Sampled: 05/01/06 12:28 Received: 05/02/06 10:05									
Specific Conductivity @ 25 C	**160**	1.0	umhos/cm	1	6E08029	05/08/06	05/08/06	SM 2510B	
WWN-MW-1 (S605080-03) Water Sampled: 05/01/06 13:15 Received: 05/02/06 10:05									
Specific Conductivity @ 25 C	**190**	1.0	umhos/cm	1	6E08029	05/08/06	05/08/06	SM 2510B	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

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Aerojet	Project: IRCTS	S605080
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: 42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	05/19/06 15:58

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW166 (S605080-01) Water Sampled: 05/01/06 10:30 Received: 05/02/06 10:05									
Freon 113	ND	0.50	ug/l	1	6050037	05/04/06	05/05/06	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.50**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.3**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*103 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*96 %*	*70-130*		"	"	"	"	

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Aerojet	Project: IRCTS	S605080
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: 42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	05/19/06 15:58

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW138A (S605080-02) Water Sampled: 05/01/06 12:28 Received: 05/02/06 10:05									
Freon 113	ND	0.50	ug/l	1	6050037	05/04/06	05/05/06	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*108 %*		*70-130*	"	"	"	"	
Surrogate: Toluene-d8		*104 %*		*70-130*	"	"	"	"	
Surrogate: 4-BFB		*101 %*		*70-130*	"	"	"	"	

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Aerojet	Project: IRCTS	S605080
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: 42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	05/19/06 15:58

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WWN-MW-1 (S605080-03) Water Sampled: 05/01/06 13:15 Received: 05/02/06 10:05									
Freon 113	ND	0.50	ug/l	1	6050037	05/04/06	05/05/06	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	5.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*107 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*99 %*	*70-130*		"	"	"	"	

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GeoSyntec Consultants - Oakland	Project: Aerojet-WNN	S407055
475 14th St, Suite 450	Project Number: NA	**Reported:**
Oakland CA, 94612	Project Manager: Graham Bradner	07/16/04 11:14

EPA 601/602 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
138A-0701-1240 (S407055-04) Water	**Sampled: 07/01/04 12:40**		**Received: 07/01/04 14:15**						
Benzene	ND	0.50	ug/l	1	4070161	07/13/04	07/13/04	EPA 624	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**4.7**	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*114 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*101 %*	*70-130*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P409394
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	10/05/04 17:05

STSW 138A (P409394-06) Water Sampled: 09/20/04 13:30 Received: 09/21/04 15:30

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4100016	10/01/04	10/01/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**4.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*119 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*	*86-119*		"	"	"	"	

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Aerojet	Project:IRCTS	S412029
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	12/14/04 18:26

Volatile Organic Compounds 8021B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW 138A (S412029-02) Water	**Sampled: 11/29/04 14:33**	**Received: 11/30/04 12:10**							
Benzene	ND	0.50	ug/l	1	4120124	12/12/04	12/13/04	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**4.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*92 %*	*70-130*		"	"	"	"	
Surrogate: 1,2-DCA-d4		*100 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*96 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*99 %*	*70-130*		"	"	"	"	

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Aerojet Corporation	Project: Kleinfelder/IRCTS	P502206
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number: 42060-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	02/25/05 11:32

WNN-138A (P502206-02) Water Sampled: 02/07/05 13:05 Received: 02/11/05 13:20

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	5020273	02/20/05	02/20/05	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**3.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*100 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*92 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*99 %*	*86-119*		"	"	"	"	

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Aerojet	Project:IRCTS	S508407
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	09/01/05 17:55

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW 138B (S508407-03) Water	**Sampled: 08/15/05 12:37**		**Received: 08/18/05 11:30**						
Freon 113	ND	0.50	ug/l	1	5080372	08/29/05	08/29/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.8**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*106 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*100 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*106 %*	*70-130*		"	"	"	"	

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KLEINFELDER

5508407

PROJ NO	PROJECT NAME
42060QT3	TRCTS
L.P. NO. (P.O. NO.)	SAMPLERS: (Signature/Number)
Bill Direct	#5268

DATE MM/DD/YY	SAMPLE I.D. TIME HH:MM:SS	SAMPLE I.D.	NO OF CONTAINERS	ANALYSIS 8010	REMARKS
8/15/05	1018	STSW 166	3	X -01	3-40 mL Vial's
↓	1139	WNN MW1	↓	X -02	↓
↓	1237	STSW 138A	↓	X -03	↓

5.4°C

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	8/15/05 1410	Sample Custody #1
Relinquished by: (Signature) Sample Custody 06544	Date/Time 8/17/05 1055	Received by: (Signature)
Relinquished by: (Signature)	Date/Time 8/18/05 1130	Received for Laboratory by: (Signature)

Remarks

Send Results To

KLEINFELDER
3077 FITE CIRCLE
SACRAMENTO, CA 95827
(916) 366-1701

Rodney Fricke Receipt EDDS

M-60 White - Sampler Canary - Return Copy To Shipper Pink - Lab Copy

CHAIN OF CUSTODY

No 0051

Sequoia Analytical

819 Striker Ave Ste 8
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(916) 921-9600
FAX (916) 921-0100
www.sequoialabs.com

Aerojet	Project:IRCTS	S512394
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:42060 QT4	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	01/05/06 16:21

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW-138A (S512394-02) Water Sampled: 12/14/05 12:01 Received: 12/16/05 13:00									
Freon 113	ND	0.50	ug/l	1	5120433	12/27/05	12/27/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*100 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*94 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*98 %*	*70-130*		"	"	"	"	

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Aerojet	Project: IRCTS	S602282
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number: N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	03/02/06 19:51

EPA 601 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW 138A (S602282-01) Water	**Sampled: 02/13/06 09:50**	**Received: 02/15/06 10:20**							
Bromodichloromethane	ND	0.50	ug/l	1	6020302	02/27/06	02/27/06	EPA 624	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	**0.82**	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*120 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*97 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*94 %*	*70-130*		"	"	"	"	

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GeoSyntec Consultants - Oakland	Project: Aerojet-WNN	S407055
475 14th St, Suite 450	Project Number: NA	**Reported:**
Oakland CA, 94612	Project Manager: Graham Bradner	07/16/04 11:14

EPA 601/602 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
166-0701-1001 (S407055-01) Water Sampled: 07/01/04 10:01 Received: 07/01/04 14:15									
Benzene	ND	0.50	ug/l	1	4070161	07/13/04	07/13/04	EPA 624	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.8**	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*111 %*		*70-130*		"	"	"	
Surrogate: Toluene-d8		*107 %*		*70-130*		"	"	"	
Surrogate: 4-BFB		*103 %*		*70-130*		"	"	"	

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Sequoia Analytical

1455 McDowell Blvd, North Ste D
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Aerojet Corporation	Project:Kleinfelder/IRCTS	P409394
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	10/05/04 17:05

STSW 166 (P409394-04) Water Sampled: 09/20/04 11:42 Received: 09/21/04 15:30

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4100016	10/01/04	10/01/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**3.2**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*118 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*106 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*	*86-119*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P412325
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	01/07/05 13:32

WNN 166 (P412325-04) Water Sampled: 12/13/04 13:22 Received: 12/16/04 13:30

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4120519	12/27/04	12/27/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.60**	0.50	"	"	"	"	"	"	B
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.8**	0.50	"	"	"	"	"	"	B
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*97 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*96 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*100 %*	*86-119*		"	"	"	"	

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Aerojet	Project:IRCTS	S508407
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:N/A	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	09/01/05 17:55

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW 166 (S508407-01) Water	**Sampled: 08/15/05 10:18**		**Received: 08/18/05 11:30**						
Freon 113	ND	0.50	ug/l	1	5080372	08/29/05	08/29/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.3**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*114 %*	*70-130*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*102 %*	*70-130*		"	"	"	"	

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Aerojet	Project:IRCTS	S512394
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:42060 QT4	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	01/05/06 16:21

Volatile Organic Compounds 8010B list by EPA Method 8260B

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW-166 (S512394-01) Water	**Sampled: 12/14/05 10:15**	**Received: 12/16/05 13:00**							
Freon 113	ND	0.50	ug/l	1	5120433	12/27/05	12/27/05	EPA 8260B	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	1.0	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.68**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.5**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*99 %*		*70-130*	"	"	"	"	
Surrogate: Toluene-d8		*93 %*		*70-130*	"	"	"	"	
Surrogate: 4-BFB		*98 %*		*70-130*	"	"	"	"	

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Aerojet	Project:IRCTS	S602280
P.O. Box 13222, Dept. 0330, Bldg. 2001	Project Number:42060	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	03/02/06 19:43

EPA 601 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
STSW 166 (S602280-01) Water	**Sampled: 02/14/06 10:18**	**Received: 02/15/06 10:20**							
Bromodichloromethane	ND	0.50	ug/l	1	6020305	02/28/06	02/28/06	EPA 624	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	1.0	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	1.0	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	**0.52**	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.6**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*133 %*	*70-130*		"	"	"	"	*S01*
Surrogate: Toluene-d8		*105 %*	*70-130*		"	"	"	"	
Surrogate: 4-BFB		*99 %*	*70-130*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P411347
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	11/29/04 12:22

STSW 38A (P411347-15) Water Sampled: 11/09/04 13:25 Received: 11/11/04 12:10

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4110570	11/22/04	11/22/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**31**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*99 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*102 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*103 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*104 %*	*86-119*		"	"	"	"	

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Aerojet Corporation	Project: Kleinfelder/IRCTS	P504116
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number: 42060-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager: Rodney Fricke	04/20/05 14:55

STSW 38A (P504116-03) Water Sampled: 04/06/05 11:30 Received: 04/11/05 11:40

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	5040131	04/15/05	04/15/05	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**31**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*107 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*101 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*107 %*	*86-119*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P411347
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	11/29/04 12:22

STSW 39A (P411347-12) Water Sampled: 11/09/04 12:55 Received: 11/11/04 12:10

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4110570	11/22/04	11/22/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	**17**	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**23**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*103 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*105 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*105 %*	*86-119*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P504116
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:42060-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	04/20/05 14:55

STSW 39A (P504116-08) Water Sampled: 04/08/05 09:12 Received: 04/11/05 11:40

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	5040135	04/15/05	04/15/05	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	**18**	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**24**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*107 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*105 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*111 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*116 %*	*86-119*		"	"	"	"	

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P411347
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:23-482130-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	11/29/04 12:22

STSW 39B (P411347-11) Water Sampled: 11/09/04 11:30 Received: 11/11/04 12:10

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	4110570	11/22/04	11/22/04	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**2.1**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*99 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*104 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*104 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*86-119*		"	"	"	"	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. Unless otherwise stated, results are reported on a wet weight basis. This analytical report must be reproduced in its entirety.

Sequoia Analytical

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Aerojet Corporation	Project:Kleinfelder/IRCTS	P504116
PO Box 13222 Bldg. 2001, Dept. 0330	Project Number:42060-A01	**Reported:**
Sacramento CA, 95813-6000	Project Manager:Rodney Fricke	04/20/05 14:55

STSW 39B (P504116-04) Water Sampled: 04/06/05 13:39 Received: 04/11/05 11:40

Volatile Organic Compounds - 8021 list by EPA Method 8260A

Sequoia Analytical - Petaluma

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Bromodichloromethane	ND	0.50	ug/l	1	5040131	04/15/05	04/15/05	EPA 8260B	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	0.50	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
1,2-Dibromoethane (EDB)	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
Dichlorodifluoromethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Freon 113	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	0.50	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.9**	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Surrogate: Dibromofluoromethane		*98 %*	*84-122*		"	"	"	"	
Surrogate: 1,2-Dichloroethane-d4		*103 %*	*74-135*		"	"	"	"	
Surrogate: Toluene-d8		*96 %*	*84-119*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*106 %*	*86-119*		"	"	"	"	

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Sequoia Analytical

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GeoSyntec Consultants - Oakland	Project: Aerojet-WNN	S407055
475 14th St, Suite 450	Project Number: NA	**Reported:**
Oakland CA, 94612	Project Manager: Graham Bradner	07/16/04 11:14

EPA 601/602 Volatile Organic Compounds by EPA Method 624

Sequoia Analytical - Sacramento

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
80A-0701-1050 (S407055-02) Water	**Sampled: 07/01/04 10:50**		**Received: 07/01/04 14:15**						
Benzene	ND	0.50	ug/l	1	4070161	07/13/04	07/13/04	EPA 624	
Bromodichloromethane	ND	0.50	"	"	"	"	"	"	
Bromoform	ND	0.50	"	"	"	"	"	"	
Bromomethane	ND	1.0	"	"	"	"	"	"	
Carbon tetrachloride	ND	0.50	"	"	"	"	"	"	
Chlorobenzene	ND	0.50	"	"	"	"	"	"	
Chloroethane	ND	0.50	"	"	"	"	"	"	
Chloromethane	ND	0.50	"	"	"	"	"	"	
Chloroform	ND	0.50	"	"	"	"	"	"	
Dibromochloromethane	ND	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
1,2-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,3-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,4-Dichlorobenzene	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,2-Dichloroethane	ND	0.50	"	"	"	"	"	"	
1,1-Dichloroethene	ND	0.50	"	"	"	"	"	"	
cis-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
trans-1,2-Dichloroethene	ND	0.50	"	"	"	"	"	"	
1,2-Dichloropropane	ND	0.50	"	"	"	"	"	"	
cis-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
trans-1,3-Dichloropropene	ND	0.50	"	"	"	"	"	"	
Methylene chloride	ND	1.0	"	"	"	"	"	"	
1,1,1-Trichloroethane	ND	0.50	"	"	"	"	"	"	
1,1,2,2-Tetrachloroethane	ND	1.0	"	"	"	"	"	"	
Tetrachloroethene	ND	0.50	"	"	"	"	"	"	
Toluene	ND	0.50	"	"	"	"	"	"	
1,1,2-Trichloroethane	ND	0.50	"	"	"	"	"	"	
Trichlorofluoromethane	ND	0.50	"	"	"	"	"	"	
Trichloroethene	**1.2**	0.50	"	"	"	"	"	"	
Vinyl chloride	ND	0.50	"	"	"	"	"	"	
Xylenes (total)	ND	0.50	"	"	"	"	"	"	
Surrogate: 1,2-DCA-d4		*109 %*		*70-130*	"	"	"	"	
Surrogate: Toluene-d8		*106 %*		*70-130*	"	"	"	"	
Surrogate: 4-BFB		*104 %*		*70-130*	"	"	"	"	

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Accutest Laboratories

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A		
Lab Sample ID:	C5513-16	Date Sampled:	04/30/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W5946.D	1	05/05/09	BD	n/a	n/a	VW202
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	0.79	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	30.1	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A		
Lab Sample ID:	C5513-16	Date Sampled:	04/30/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		60-130%
2037-26-5	Toluene-D8	100%		60-130%
460-00-4	4-Bromofluorobenzene	95%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A		
Lab Sample ID:	C5513-16	Date Sampled:	04/30/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
		Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1010	200	91	ug/l	50	05/05/09 17:13	HD	EPA 314
Specific Conductivity	193	1.0	1.0	umhos/cm	1	05/04/09	RL	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C5513-45	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W6020.D	1	05/07/09	BD	n/a	n/a	VW205
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	9.2	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C5513-45	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		60-130%
2037-26-5	Toluene-D8	99%		60-130%
460-00-4	4-Bromofluorobenzene	97%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C5513-45	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
		Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1.8 U	4.0	1.8	ug/l	1	05/05/09 06:12	HD	EPA 314
Specific Conductivity	160	1.0	1.0	umhos/cm	1	05/04/09	RL	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-80A		
Lab Sample ID:	C5513-41	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W6016.D	1	05/07/09	BD	n/a	n/a	VW205
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	0.45	0.50	0.30	ug/l	J
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	30.1	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-80A		
Lab Sample ID:	C5513-41	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		60-130%
2037-26-5	Toluene-D8	100%		60-130%
460-00-4	4-Bromofluorobenzene	95%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-80A		
Lab Sample ID:	C5513-41	Date Sampled:	05/01/09
Matrix:	AQ - Ground Water	Date Received:	05/01/09
		Percent Solids:	n/a
Project:	SL205493018-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	3.7 J	4.0	1.8	ug/l	1	05/06/09 12:02	HD	EPA 314
Specific Conductivity	159	1.0	1.0	umhos/cm	1	05/04/09	RL	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL



Technical Report for

Aerojet

SL205493018-Aerojet-Inactive Rancho Cordova Test Site

WNN-IRCTS GW Monitoring

Accutest Job Number: C7478

Sampling Date: 09/15/09

Report to:

Aerojet-General Corporation
10951 White Rock Road, Suite B
Rancho Cardova, CA 95670
rodney.fricke@aerojet.com; kerik.kouklis@aerojet.com;
randy.kellerman@ch2m.com; tleo@elmontgomery.com
ATTN: Rodney Fricke

Total number of pages in report: 74

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Laurie Glantz-Murphy
Laboratory Director

Client Service contact: Anne Kathain 408-588-0200

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Certifications: CA (08258CA)

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Sample Summary

Aerojet

Job No: C7478

SL205493018-Aerojet-Inactive Rancho Cordova Test Site
Project No: WNN-IRCTS GW Monitoring

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
C7478-1	09/15/09	10:20	ERIC	09/16/09	AQ	Ground Water	WNN-MW-1
C7478-1F	09/15/09	10:20	ERIC	09/16/09	AQ	Groundwater Filtered	WNN-MW-1
C7478-2	09/15/09	13:17	ERIC	09/16/09	AQ	Ground Water	STSW-38A
C7478-2F	09/15/09	13:17	ERIC	09/16/09	AQ	Groundwater Filtered	STSW-38A
C7478-3	09/15/09	09:32	ERIC	09/16/09	AQ	Ground Water	STSW-39A-PURGE
C7478-3F	09/15/09	09:32	ERIC	09/16/09	AQ	Groundwater Filtered	STSW-39A-PURGE
C7478-4	09/15/09	09:15	ERIC	09/16/09	AQ	Ground Water	STSW-39A-BAG
C7478-5	09/15/09	11:21	ERIC	09/16/09	AQ	Ground Water	STSW-78A
C7478-5F	09/15/09	11:21	ERIC	09/16/09	AQ	Groundwater Filtered	STSW-78A
C7478-6	09/15/09	12:35	ERIC	09/16/09	AQ	Ground Water	STSW-138A-PURGE
C7478-6F	09/15/09	12:35	ERIC	09/16/09	AQ	Groundwater Filtered	STSW-138A-PURGE
C7478-7	09/15/09	12:20	ERIC	09/16/09	AQ	Ground Water	STSW-138A-BAG
C7478-8	09/15/09	08:26	ERIC	09/16/09	AQ	Ground Water	STSW-166

Sample Summary
(continued)

Aerojet

Job No: C7478

SL205493018-Aerojet-Inactive Rancho Cordova Test Site
Project No: WNN-IRCTS GW Monitoring

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
C7478-8F	09/15/09	08:26	ERIC	09/16/09	AQ	Groundwater Filtered	STSW-166

Sample Results

Report of Analysis

Accutest Laboratories

Report of Analysis

Client Sample ID: WNN-MW-1
Lab Sample ID: C7478-1 **Date Sampled:** 09/15/09
Matrix: AQ - Ground Water **Date Received:** 09/16/09
Method: SW846 8260B **Percent Solids:** n/a
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8510.D	1	09/25/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.54	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	32.8	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	WNN-MW-1		
Lab Sample ID:	C7478-1	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		60-130%
2037-26-5	Toluene-D8	105%		60-130%
460-00-4	4-Bromofluorobenzene	104%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	WNN-MW-1		
Lab Sample ID:	C7478-1	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	9800	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	495	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	WNN-MW-1		
Lab Sample ID:	C7478-1	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	72.6	8.0	3.6	ug/l	2	09/17/09 16:04	HU	EPA 314
Specific Conductivity	178	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	WNN-MW-1		
Lab Sample ID:	C7478-1F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	1040	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	465	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID: STSW-38A
Lab Sample ID: C7478-2 **Date Sampled:** 09/15/09
Matrix: AQ - Ground Water **Date Received:** 09/16/09
Method: SW846 8260B **Percent Solids:** n/a
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8511.D	1	09/25/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	ND	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	0.31	0.50	0.30	ug/l	J
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	36.2	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C7478-2	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		60-130%
2037-26-5	Toluene-D8	106%		60-130%
460-00-4	4-Bromofluorobenzene	104%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C7478-2	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	276	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	5.0	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C7478-2	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1.8 U	4.0	1.8	ug/l	1	09/17/09 12:42	HU	EPA 314
Specific Conductivity	196	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-38A		
Lab Sample ID:	C7478-2F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	< 50	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	< 5.0	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID: STSW-39A-PURGE
Lab Sample ID: C7478-3 **Date Sampled:** 09/15/09
Matrix: AQ - Ground Water **Date Received:** 09/16/09
Method: SW846 8260B **Percent Solids:** n/a
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8512.D	1	09/25/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	24.2	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	63.1	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-PURGE		
Lab Sample ID:	C7478-3	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		60-130%
2037-26-5	Toluene-D8	106%		60-130%
460-00-4	4-Bromofluorobenzene	103%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-PURGE		
Lab Sample ID:	C7478-3	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	3930	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	138	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-PURGE		
Lab Sample ID:	C7478-3	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	3220	400	180	ug/l	100	09/18/09 11:43	HU	EPA 314
Specific Conductivity	212	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-PURGE		
Lab Sample ID:	C7478-3F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	< 50	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	< 5.0	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-BAG		
Lab Sample ID:	C7478-4	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8513.D	1	09/25/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	18.0	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	19.9	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-BAG		
Lab Sample ID:	C7478-4	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	100%		60-130%
2037-26-5	Toluene-D8	105%		60-130%
460-00-4	4-Bromofluorobenzene	103%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-39A-BAG		
Lab Sample ID:	C7478-4	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	2990	320	150	ug/l	80	09/18/09 11:57	HU	EPA 314
Specific Conductivity	220	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID: STSW-78A
Lab Sample ID: C7478-5 **Date Sampled:** 09/15/09
Matrix: AQ - Ground Water **Date Received:** 09/16/09
Method: SW846 8260B **Percent Solids:** n/a
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8545.D	1.67	09/26/09	BD	n/a	n/a	VW299
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.84	0.50	ug/l	
75-25-2	Bromoform	ND	0.84	0.84	ug/l	
108-90-7	Chlorobenzene	ND	0.84	0.50	ug/l	
75-00-3	Chloroethane	ND	0.84	0.50	ug/l	
67-66-3	Chloroform	8.2	0.84	0.50	ug/l	
56-23-5	Carbon tetrachloride	ND	0.84	0.33	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.84	0.50	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.84	0.33	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.84	0.50	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.84	0.50	ug/l	
124-48-1	Dibromochloromethane	ND	0.84	0.33	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.84	0.50	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.84	0.50	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.84	0.84	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.84	0.50	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.84	0.50	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.84	0.50	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.84	0.50	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.84	0.33	ug/l	
76-13-1	Freon 113	ND	0.84	0.84	ug/l	
74-83-9	Methyl bromide	ND	8.4	2.5	ug/l	
75-09-2	Methylene chloride	ND	17	8.4	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.84	0.33	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.84	0.33	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.84	0.33	ug/l	
127-18-4	Tetrachloroethylene	ND	0.84	0.33	ug/l	
79-01-6	Trichloroethylene	96.9	0.84	0.50	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.84	0.50	ug/l	
75-01-4	Vinyl chloride	ND	0.84	0.50	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-78A		
Lab Sample ID:	C7478-5	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		60-130%
2037-26-5	Toluene-D8	105%		60-130%
460-00-4	4-Bromofluorobenzene	104%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-78A		
Lab Sample ID:	C7478-5	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	457	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	40.5	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-78A		
Lab Sample ID:	C7478-5	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1420	160	73	ug/l	40	09/18/09 11:28	HU	EPA 314
Specific Conductivity	171	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-78A		
Lab Sample ID:	C7478-5F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	< 50	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	< 5.0	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-PURGE		
Lab Sample ID:	C7478-6	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8515.D	1	09/25/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	1.5	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	30.8	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-PURGE		
Lab Sample ID:	C7478-6	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		60-130%
2037-26-5	Toluene-D8	106%		60-130%
460-00-4	4-Bromofluorobenzene	105%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-PURGE		
Lab Sample ID:	C7478-6	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	500	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	8.4	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-PURGE		
Lab Sample ID:	C7478-6	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	2250	400	180	ug/l	100	09/18/09 12:12	HU	EPA 314
Specific Conductivity	164	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-PURGE		
Lab Sample ID:	C7478-6F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	< 50	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	< 5.0	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-BAG		
Lab Sample ID:	C7478-7	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8516.D	1	09/26/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	0.85	0.50	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	29.1	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-BAG		
Lab Sample ID:	C7478-7	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		60-130%
2037-26-5	Toluene-D8	105%		60-130%
460-00-4	4-Bromofluorobenzene	105%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-138A-BAG		
Lab Sample ID:	C7478-7	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	813	100	46	ug/l	25	09/17/09 18:00	HU	EPA 314
Specific Conductivity	224	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID: STSW-166
Lab Sample ID: C7478-8 **Date Sampled:** 09/15/09
Matrix: AQ - Ground Water **Date Received:** 09/16/09
Method: SW846 8260B **Percent Solids:** n/a
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	W8517.D	1	09/26/09	BD	n/a	n/a	VW298
Run #2							

	Purge Volume
Run #1	10.0 ml
Run #2	

VOA Special List

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	0.50	0.30	ug/l	
75-25-2	Bromoform	ND	0.50	0.50	ug/l	
108-90-7	Chlorobenzene	ND	0.50	0.30	ug/l	
75-00-3	Chloroethane	ND	0.50	0.30	ug/l	
67-66-3	Chloroform	0.32	0.50	0.30	ug/l	J
56-23-5	Carbon tetrachloride	ND	0.50	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	0.50	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	0.50	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	0.50	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.50	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	0.50	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	0.50	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	0.50	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	0.50	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	0.50	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	0.50	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	0.50	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.20	ug/l	
76-13-1	Freon 113	ND	0.50	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	10	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	0.50	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.50	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.50	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	0.50	0.20	ug/l	
79-01-6	Trichloroethylene	5.7	0.50	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	0.50	0.30	ug/l	
75-01-4	Vinyl chloride	ND	0.50	0.30	ug/l	

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-166		
Lab Sample ID:	C7478-8	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

VOA Special List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		60-130%
2037-26-5	Toluene-D8	106%		60-130%
460-00-4	4-Bromofluorobenzene	104%		60-130%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-166		
Lab Sample ID:	C7478-8	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	5610	50	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	21.2	5.0	ug/l	1	09/18/09	09/24/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA869
(2) Prep QC Batch: MP1609

RL = Reporting Limit

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-166		
Lab Sample ID:	C7478-8	**Date Sampled:**	09/15/09
Matrix:	AQ - Ground Water	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Perchlorate by IC								
Perchlorate	1930	400	180	ug/l	100	09/18/09 12:26	HU	EPA 314
Specific Conductivity	163	1.0	1.0	umhos/cm	1	09/17/09	MF	SM18 2510B/EPA 120.1

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

Accutest Laboratories

Report of Analysis

Client Sample ID:	STSW-166		
Lab Sample ID:	C7478-8F	**Date Sampled:**	09/15/09
Matrix:	AQ - Groundwater Filtered	**Date Received:**	09/16/09
		Percent Solids:	n/a
Project:	SL205493018-Aerojet-Inactive Rancho Cordova Test Site		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Iron	612	50	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]
Manganese	14.2	5.0	ug/l	1	09/29/09	09/29/09	CT	SW846 6010B [1]	SW3010A [2]

(1) Instrument QC Batch: MA875
(2) Prep QC Batch: MP1637

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Northern California ACCUTEST Laboratories

CHAIN OF CUSTODY

3334 Victor Court, Santa Clara, CA 95054
(408) 588-0200 FAX: (408) 588-0201

FED-EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest NC Job #: C C7478

Client / Reporting Information

Company Name: Aerojet Boeing
Address: 10951 White Rock Road, Suite 100
City: Rancho Cordova State: CA Zip: 95670
Project Contact: Rodney Fricke
Phone #: 916-355-5161
Samplers's Name: Eric Marx Steele

Project Information

Project Name: WNN - IRCTS Groundwater Monitoring
Street
City State
Project #
EMAIL: rodney.fricke@aerojet.com
Client Purchase Order #: S32125

Requested Analysis

Matrix Codes: WW- Water; GW- Ground Water; SW- Surface Water; SO- Soil; OI-Oil; WP-Wipe; LIQ - Non-aqueous Liquid; AIR; DW- Drinking Water (Perchlorate Only)

Accutest Sample ID	Sample ID / Field Point / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	None	NaHSO4	MeOH	Encore	8260 Short List - HVOC	6010 Total Iron & Manganese SC	Perchlorate	Dissolved Iron & Manganese	Depth to Water, feet TOC	Temperature, degrees C	pH	Conductivity, umos	LAB USE ONLY
-1	WNN-MW1	9/15/09	1020	EM	GW	6	3				3				X	X	X	X	139.84	20.9	7.8	190.1	
-2	STSW-38A		1317		GW	6	3				3				X	X	X	X	139.40	21.0	8.13	209.0	
-3	STSW-39A-Purge		0932		GW	6	3				3				X	X	X	X	139.60	19.0	7.40	229.0	
-4	STSW-39A-Bag		0915		GW	3	3				1				X		X		139.60	17.8	7.80	231.4	
-5	STSW-78A		1121		GW	6	3				3				X	X	X	X	139.20	20.0	7.8	180.0	
-6	STSW-138A-Purge		1235		GW	6	3				3				X	X	X	X	139.35	21.2	7.9	173.0	
-7	STSW-138A-Bag		1220		GW	4	3				1				X		X		139.35	24.2	8.0	249.0	
-8	STSW-166		0826		GW	6	3				3				X	X	X	X	138.90	19.9	7.8	174.0	
	3 vials each (w/HCl) EM				GW																		
					GW																		

Turnaround Time (Business days)

- [X] Std. 15 Business Days
- [ ] 10 Day
- [ ] 5 Day (5% markup)
- [ ] 3 Day
- [ ] 2 Day
- [ ] 1 Day *(75% markup)*
- [ ] Same Day

Approved By:/ Date:

Emergency T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [X] Commercial "B"
- [X] EDF for Geotracker
- [X] EDD Format: GIS Key
- Provide EDF Global ID
- Provide EDF Location:

Comments / Remarks

Dissolved Iron & Manganese samples are field filtered
None of the Metal samples have been preserved
in-field, short Holds. VIALS 3 EA (x7) (w/HCl)
Total metals sampled -> preserved in Lab to pH<2
Dissolved metals Samples (field-filtered) If to pH<2

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1		9/16/09 1100	1	2	9/16/09 14:50	2
3	Relinquished by:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Appropriate Bottle / Pres Y/N; Labels match Coc? Y/N	Headspace Y/N; Separate Receipt Log Y/N; On Ice Y/N; Cooler Temp. 5.0 °C

C7478: Chain of Custody
Page 1 of 1

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW298-MB2	W8502.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.30	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	20	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.20	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	60-130%
2037-26-5	Toluene-D8	105%	60-130%
460-00-4	4-Bromofluorobenzene	105%	60-130%

Method Blank Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW299-MB	W8529.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.30	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	20	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.20	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	60-130%
2037-26-5	Toluene-D8	105%	60-130%
460-00-4	4-Bromofluorobenzene	106%	60-130%

Method Blank Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW298-MB	W8493.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

VW298-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
75-27-4	Bromodichloromethane	ND	1.0	0.30	ug/l	
75-25-2	Bromoform	ND	1.0	0.50	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.30	ug/l	
75-00-3	Chloroethane	ND	1.0	0.30	ug/l	
67-66-3	Chloroform	ND	1.0	0.30	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.20	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.30	ug/l	
75-35-4	1,1-Dichloroethylene	ND	1.0	0.20	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.30	ug/l	
78-87-5	1,2-Dichloropropane	ND	1.0	0.30	ug/l	
124-48-1	Dibromochloromethane	ND	1.0	0.20	ug/l	
75-71-8	Dichlorodifluoromethane	ND	1.0	0.30	ug/l	
156-59-2	cis-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.50	ug/l	
541-73-1	m-Dichlorobenzene	ND	1.0	0.30	ug/l	
95-50-1	o-Dichlorobenzene	ND	1.0	0.30	ug/l	
106-46-7	p-Dichlorobenzene	ND	1.0	0.30	ug/l	
156-60-5	trans-1,2-Dichloroethylene	ND	1.0	0.30	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	1.0	0.20	ug/l	
76-13-1	Freon 113	ND	5.0	0.50	ug/l	
74-83-9	Methyl bromide	ND	5.0	1.5	ug/l	
75-09-2	Methylene chloride	ND	20	5.0	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.20	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.20	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.20	ug/l	
127-18-4	Tetrachloroethylene	ND	1.0	0.20	ug/l	
79-01-6	Trichloroethylene	ND	1.0	0.30	ug/l	
75-69-4	Trichlorofluoromethane	ND	1.0	0.30	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.30	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	101%	60-130%
2037-26-5	Toluene-D8	105%	60-130%
460-00-4	4-Bromofluorobenzene	105%	60-130%

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW298-BS	W8490.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-27-4	Bromodichloromethane	20	22.7	114	60-130
75-25-2	Bromoform	20	22.6	113	60-130
108-90-7	Chlorobenzene	20	19.1	96	60-130
75-00-3	Chloroethane	20	19.1	96	60-130
67-66-3	Chloroform	20	21.3	107	60-130
56-23-5	Carbon tetrachloride	20	23.7	119	60-130
75-34-3	1,1-Dichloroethane	20	21.9	110	60-130
75-35-4	1,1-Dichloroethylene	20	18.0	90	60-130
107-06-2	1,2-Dichloroethane	20	26.4	132* [a]	60-130
78-87-5	1,2-Dichloropropane	20	20.0	100	60-130
124-48-1	Dibromochloromethane	20	21.2	106	60-130
75-71-8	Dichlorodifluoromethane	20	27.5	138* [a]	60-130
156-59-2	cis-1,2-Dichloroethylene	20	18.7	94	60-130
10061-01-5	cis-1,3-Dichloropropene	20	20.8	104	60-130
541-73-1	m-Dichlorobenzene	20	17.7	89	60-130
95-50-1	o-Dichlorobenzene	20	17.5	88	60-130
106-46-7	p-Dichlorobenzene	20	17.5	88	60-130
156-60-5	trans-1,2-Dichloroethylene	20	19.8	99	60-130
10061-02-6	trans-1,3-Dichloropropene	20	23.4	117	60-130
76-13-1	Freon 113	20	19.0	95	60-130
74-83-9	Methyl bromide	20	19.6	98	60-130
75-09-2	Methylene chloride	20	16.9	85	60-130
71-55-6	1,1,1-Trichloroethane	20	22.8	114	60-130
79-34-5	1,1,2,2-Tetrachloroethane	20	19.6	98	60-130
79-00-5	1,1,2-Trichloroethane	20	20.5	103	60-130
127-18-4	Tetrachloroethylene	20	17.8	89	60-130
79-01-6	Trichloroethylene	20	20.1	101	60-130
75-69-4	Trichlorofluoromethane	20	22.5	113	60-130
75-01-4	Vinyl chloride	20	21.9	110	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	106%	60-130%
2037-26-5	Toluene-D8	106%	60-130%
460-00-4	4-Bromofluorobenzene	107%	60-130%

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW298-BS	W8490.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

(a) High percent recovery; not detected in associated samples.

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW298-BS	W8492.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	60-130%
2037-26-5	Toluene-D8	106%	60-130%
460-00-4	4-Bromofluorobenzene	105%	60-130%

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW299-BS	W8526.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
75-27-4	Bromodichloromethane	20	22.2	111	60-130
75-25-2	Bromoform	20	21.9	110	60-130
108-90-7	Chlorobenzene	20	18.3	92	60-130
75-00-3	Chloroethane	20	19.7	99	60-130
67-66-3	Chloroform	20	21.2	106	60-130
56-23-5	Carbon tetrachloride	20	23.0	115	60-130
75-34-3	1,1-Dichloroethane	20	21.5	108	60-130
75-35-4	1,1-Dichloroethylene	20	17.5	88	60-130
107-06-2	1,2-Dichloroethane	20	26.2	131* [a]	60-130
78-87-5	1,2-Dichloropropane	20	19.3	97	60-130
124-48-1	Dibromochloromethane	20	20.5	103	60-130
75-71-8	Dichlorodifluoromethane	20	29.5	148* [a]	60-130
156-59-2	cis-1,2-Dichloroethylene	20	18.3	92	60-130
10061-01-5	cis-1,3-Dichloropropene	20	20.0	100	60-130
541-73-1	m-Dichlorobenzene	20	17.1	86	60-130
95-50-1	o-Dichlorobenzene	20	17.2	86	60-130
106-46-7	p-Dichlorobenzene	20	17.0	85	60-130
156-60-5	trans-1,2-Dichloroethylene	20	19.6	98	60-130
10061-02-6	trans-1,3-Dichloropropene	20	22.1	111	60-130
76-13-1	Freon 113	20	18.5	93	60-130
74-83-9	Methyl bromide	20	20.4	102	60-130
75-09-2	Methylene chloride	20	17.0	85	60-130
71-55-6	1,1,1-Trichloroethane	20	22.2	111	60-130
79-34-5	1,1,2,2-Tetrachloroethane	20	18.9	95	60-130
79-00-5	1,1,2-Trichloroethane	20	19.7	99	60-130
127-18-4	Tetrachloroethylene	20	16.8	84	60-130
79-01-6	Trichloroethylene	20	19.3	97	60-130
75-69-4	Trichlorofluoromethane	20	23.1	116	60-130
75-01-4	Vinyl chloride	20	22.5	113	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	108%	60-130%
2037-26-5	Toluene-D8	105%	60-130%
460-00-4	4-Bromofluorobenzene	107%	60-130%

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW299-BS	W8526.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

(a) High percent recovery; not detected in associated samples.

Blank Spike Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VW299-BS	W8528.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	99%	60-130%
2037-26-5	Toluene-D8	107%	60-130%
460-00-4	4-Bromofluorobenzene	105%	60-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C7547-1MS	W8519.D	1	09/26/09	BD	n/a	n/a	VW298
C7547-1MSD	W8520.D	1	09/26/09	BD	n/a	n/a	VW298
C7547-1	W8503.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

CAS No.	Compound	C7547-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-27-4	Bromodichloromethane	ND		20	21.3	107	22.3	112	5	60-130/25
75-25-2	Bromoform	ND		20	21.5	108	21.8	109	1	60-130/25
108-90-7	Chlorobenzene	ND		20	17.2	86	18.2	91	6	60-130/25
75-00-3	Chloroethane	ND		20	16.1	81	17.5	88	8	60-130/25
67-66-3	Chloroform	ND		20	18.7	94	19.8	99	6	60-130/25
56-23-5	Carbon tetrachloride	ND		20	19.3	97	20.3	102	5	60-130/25
75-34-3	1,1-Dichloroethane	ND		20	18.7	94	19.8	99	6	60-130/25
75-35-4	1,1-Dichloroethylene	ND		20	14.5	73	15.2	76	5	60-130/25
107-06-2	1,2-Dichloroethane	ND		20	25.6	128	26.0	130	2	60-130/25
78-87-5	1,2-Dichloropropane	ND		20	18.6	93	19.5	98	5	60-130/25
124-48-1	Dibromochloromethane	ND		20	20.1	101	20.8	104	3	60-130/25
75-71-8	Dichlorodifluoromethane	ND		20	23.5	118	26.2	131* [a]	11	60-130/25
156-59-2	cis-1,2-Dichloroethylene	ND		20	16.1	81	17.2	86	7	60-130/25
10061-01-5	cis-1,3-Dichloropropene	ND		20	19.0	95	19.7	99	4	60-130/25
541-73-1	m-Dichlorobenzene	ND		20	15.4	77	16.3	82	6	60-130/25
95-50-1	o-Dichlorobenzene	ND		20	15.7	79	16.6	83	6	60-130/25
106-46-7	p-Dichlorobenzene	ND		20	15.4	77	16.2	81	5	60-130/25
156-60-5	trans-1,2-Dichloroethylene	ND		20	16.4	82	17.1	86	4	60-130/25
10061-02-6	trans-1,3-Dichloropropene	ND		20	21.0	105	21.9	110	4	60-130/25
76-13-1	Freon 113	ND		20	14.8	74	15.8	79	7	60-130/25
74-83-9	Methyl bromide	ND		20	16.6	83	18.3	92	10	60-130/25
75-09-2	Methylene chloride	ND		20	15.0	75	15.8	79	5	60-130/25
71-55-6	1,1,1-Trichloroethane	ND		20	18.5	93	19.6	98	6	60-130/25
79-34-5	1,1,2,2-Tetrachloroethane	ND		20	18.4	92	18.9	95	3	60-130/25
79-00-5	1,1,2-Trichloroethane	ND		20	19.6	98	20.2	101	3	60-130/25
127-18-4	Tetrachloroethylene	ND		20	14.6	73	15.5	78	6	60-130/25
79-01-6	Trichloroethylene	ND		20	17.3	87	18.1	91	5	60-130/25
75-69-4	Trichlorofluoromethane	ND		20	18.7	94	20.4	102	9	60-130/25
75-01-4	Vinyl chloride	ND		20	17.6	88	19.4	97	10	60-130/25

CAS No.	Surrogate Recoveries	MS	MSD	C7547-1	Limits
1868-53-7	Dibromofluoromethane	103%	103%	102%	60-130%
2037-26-5	Toluene-D8	104%	104%	106%	60-130%
460-00-4	4-Bromofluorobenzene	106%	107%	105%	60-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C7547-1MS	W8519.D	1	09/26/09	BD	n/a	n/a	VW298
C7547-1MSD	W8520.D	1	09/26/09	BD	n/a	n/a	VW298
C7547-1	W8503.D	1	09/25/09	BD	n/a	n/a	VW298

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-1, C7478-2, C7478-3, C7478-4, C7478-6, C7478-7, C7478-8

(a) Outside of in-house control limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C7506-2MS	W8546.D	1	09/26/09	BD	n/a	n/a	VW299
C7506-2MSD	W8547.D	1	09/26/09	BD	n/a	n/a	VW299
C7506-2	W8534.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

CAS No.	Compound	C7506-2 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
75-27-4	Bromodichloromethane	ND		20	21.1	106	23.7	119	12	60-130/25
75-25-2	Bromoform	ND		20	20.6	103	22.9	115	11	60-130/25
108-90-7	Chlorobenzene	ND		20	17.0	85	19.0	95	11	60-130/25
75-00-3	Chloroethane	ND		20	15.6	78	18.1	91	15	60-130/25
67-66-3	Chloroform	2.4		20	21.4	95	24.1	109	12	60-130/25
56-23-5	Carbon tetrachloride	ND		20	19.1	96	20.8	104	9	60-130/25
75-34-3	1,1-Dichloroethane	2.1		20	20.8	94	23.5	107	12	60-130/25
75-35-4	1,1-Dichloroethylene	4.4		20	18.1	69	19.6	76	8	60-130/25
107-06-2	1,2-Dichloroethane	ND		20	25.1	126	29.2	146* [a]	15	60-130/25
78-87-5	1,2-Dichloropropane	ND		20	18.5	93	20.8	104	12	60-130/25
124-48-1	Dibromochloromethane	ND		20	19.4	97	21.8	109	12	60-130/25
75-71-8	Dichlorodifluoromethane	ND		20	23.6	118	26.2	131* [a]	10	60-130/25
156-59-2	cis-1,2-Dichloroethylene	ND		20	16.4	82	18.8	94	14	60-130/25
10061-01-5	cis-1,3-Dichloropropene	ND		20	18.7	94	20.9	105	11	60-130/25
541-73-1	m-Dichlorobenzene	ND		20	15.3	77	17.3	87	12	60-130/25
95-50-1	o-Dichlorobenzene	ND		20	15.6	78	17.5	88	11	60-130/25
106-46-7	p-Dichlorobenzene	ND		20	15.4	77	17.1	86	10	60-130/25
156-60-5	trans-1,2-Dichloroethylene	ND		20	16.4	82	18.2	91	10	60-130/25
10061-02-6	trans-1,3-Dichloropropene	ND		20	20.2	101	22.6	113	11	60-130/25
76-13-1	Freon 113	ND		20	14.9	75	15.8	79	6	60-130/25
74-83-9	Methyl bromide	ND		20	16.1	81	18.8	94	15	60-130/25
75-09-2	Methylene chloride	ND		20	14.9	75	17.4	87	15	60-130/25
71-55-6	1,1,1-Trichloroethane	ND		20	18.5	93	20.4	102	10	60-130/25
79-34-5	1,1,2,2-Tetrachloroethane	ND		20	18.0	90	19.8	99	10	60-130/25
79-00-5	1,1,2-Trichloroethane	ND		20	18.9	95	21.3	107	12	60-130/25
127-18-4	Tetrachloroethylene	ND		20	14.4	72	15.9	80	10	60-130/25
79-01-6	Trichloroethylene	ND		20	17.2	86	19.0	95	10	60-130/25
75-69-4	Trichlorofluoromethane	ND		20	18.3	92	20.6	103	12	60-130/25
75-01-4	Vinyl chloride	ND		20	17.3	87	19.5	98	12	60-130/25

CAS No.	Surrogate Recoveries	MS	MSD	C7506-2	Limits
1868-53-7	Dibromofluoromethane	102%	105%	101%	60-130%
2037-26-5	Toluene-D8	103%	104%	107%	60-130%
460-00-4	4-Bromofluorobenzene	105%	107%	105%	60-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: C7478
Account: AJCAS Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
C7506-2MS	W8546.D	1	09/26/09	BD	n/a	n/a	VW299
C7506-2MSD	W8547.D	1	09/26/09	BD	n/a	n/a	VW299
C7506-2	W8534.D	1	09/26/09	BD	n/a	n/a	VW299

The QC reported here applies to the following samples: **Method:** SW846 8260B

C7478-5

(a) Outside of in-house control limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1609
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/18/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	14	21		
Antimony	10	6.9	5.3		
Arsenic	10	4.4	3.1		
Barium	5.0	.6	.7		
Beryllium	5.0	.1	.2		
Boron	50	8.6	11		
Cadmium	2.0	.3	.3		
Calcium	50	29	12		
Chromium	5.0	.4	.6		
Cobalt	5.0	.4	.4		
Copper	5.0	.8	1.1		
Iron	50	2.6	18	-29	* (a)
Lead	5.0	3.3	1.3		
Lithium	10	2.2	2.5		
Magnesium	50	9.6	13		
Manganese	5.0	.1	.2	0.20	<5.0
Molybdenum	5.0	1.3	1		
Nickel	5.0	.8	.5		
Potassium	500	58	60		
Selenium	20	14	12		
Silicon	50	3.4	5.3		
Silver	5.0	.9	.7		
Sodium	100	15	13		
Strontium	10	.3	2.4		
Thallium	20	6.5	6.4		
Tin	50	2.3	2		
Titanium	2.0	.2	.2		
Vanadium	5.0	.7	.5		
Zinc	10	.9	1.1		

Associated samples MP1609: C7478-1, C7478-2, C7478-3, C7478-5, C7478-6, C7478-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) No samples for this element reported in the area bracketed by this QC.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1609
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/18/09

Metal	C7478-2 Original	MS	Spikelot MPIR1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium	anr				
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	276	748	500	94.4	80-120
Lead	anr				
Lithium					
Magnesium					
Manganese	5.0	506	500	100.2	80-120
Molybdenum					
Nickel	anr				
Potassium					
Selenium	anr				
Silicon					
Silver	anr				
Sodium	anr				
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				

Associated samples MP1609: C7478-1, C7478-2, C7478-3, C7478-5, C7478-6, C7478-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1609 Methods: SW846 6010B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 09/18/09

Metal	C7478-2 Original	MSD	Spikelot MPIR1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium	anr					
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	276	772	500	99.2	3.2	20
Lead	anr					
Lithium						
Magnesium						
Manganese	5.0	520	500	103.0	2.7	20
Molybdenum						
Nickel	anr					
Potassium						
Selenium	anr					
Silicon						
Silver	anr					
Sodium	anr					
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					

Associated samples MP1609: C7478-1, C7478-2, C7478-3, C7478-5, C7478-6, C7478-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1609
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date:		09/18/09				09/18/09			
Metal	BSP Result	Spikelot MPIR1	% Rec	QC Limits	BSD Result	Spikelot MPIR1	% Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium	anr								
Boron									
Cadmium	anr								
Calcium									
Chromium	anr								
Cobalt									
Copper	anr								
Iron	502	500	100.4	80-120	507	500	101.4	1.0	
Lead	anr								
Lithium									
Magnesium									
Manganese	513	500	102.6	80-120	515	500	103.0	0.4	
Molybdenum									
Nickel	anr								
Potassium									
Selenium	anr								
Silicon									
Silver	anr								
Sodium	anr								
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc	anr								

Associated samples MP1609: C7478-1, C7478-2, C7478-3, C7478-5, C7478-6, C7478-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1609
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/18/09

Metal	C7478-2 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium	anr			
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	276	276	0.2	0-10
Lead	anr			
Lithium				
Magnesium				
Manganese	5.00	5.50	10.0	0-10
Molybdenum				
Nickel	anr			
Potassium				
Selenium	anr			
Silicon				
Silver	anr			
Sodium	anr			
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			

Associated samples MP1609: C7478-1, C7478-2, C7478-3, C7478-5, C7478-6, C7478-8

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1637
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/29/09

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	14	21		
Antimony	10	6.9	5.3		
Arsenic	10	4.4	3.1		
Barium	5.0	.6	.7		
Beryllium	5.0	.1	.2		
Boron	50	8.6	11		
Cadmium	2.0	.3	.3		
Calcium	50	29	12		
Chromium	5.0	.4	.6		
Cobalt	5.0	.4	.4		
Copper	5.0	.8	1.1		
Iron	50	2.6	18	2.8	<50
Lead	5.0	3.3	1.3		
Lithium	10	2.2	2.5		
Magnesium	50	9.6	13		
Manganese	5.0	.1	.2	0.10	<5.0
Molybdenum	5.0	1.3	1		
Nickel	5.0	.8	.5		
Potassium	500	58	60		
Selenium	20	14	12		
Silicon	50	3.4	5.3		
Silver	5.0	.9	.7		
Sodium	100	15	13		
Strontium	10	.3	2.4		
Thallium	20	6.5	6.4		
Tin	50	2.3	2		
Titanium	2.0	.2	.2		
Vanadium	5.0	.7	.5		
Zinc	10	.9	1.1		

Associated samples MP1637: C7478-1F, C7478-2F, C7478-3F, C7478-5F, C7478-6F, C7478-8F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1637
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/29/09

Metal	C7478-2F Original	MS	Spikelot MPIR1	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron	22.1	565	500	108.6	80-120
Lead					
Lithium					
Magnesium					
Manganese	3.8	524	500	104.0	80-120
Molybdenum					
Nickel	anr				
Potassium					
Selenium					
Silicon					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					

Associated samples MP1637: C7478-1F, C7478-2F, C7478-3F, C7478-5F, C7478-6F, C7478-8F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1637
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/29/09

Metal	C7478-2F Original	MSD	Spikelot MPIR1	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron	22.1	541	500	103.8	4.3	20
Lead						
Lithium						
Magnesium						
Manganese	3.8	515	500	102.2	1.7	20
Molybdenum						
Nickel	anr					
Potassium						
Selenium						
Silicon						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						

Associated samples MP1637: C7478-1F, C7478-2F, C7478-3F, C7478-5F, C7478-6F, C7478-8F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1637
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/29/09 09/29/09

Metal	BSP Result	Spikelot MPIR1	% Rec	QC Limits	BSD Result	Spikelot MPIR1	% Rec	BSD RPD	QC Limit
Aluminum									
Antimony									
Arsenic	anr								
Barium									
Beryllium									
Boron									
Cadmium									
Calcium									
Chromium									
Cobalt									
Copper									
Iron	530	500	106.0	80-120	539	500	107.8	1.7	
Lead									
Lithium									
Magnesium									
Manganese	515	500	103.0	80-120	510	500	102.0	1.0	
Molybdenum									
Nickel	anr								
Potassium									
Selenium									
Silicon									
Silver									
Sodium									
Strontium									
Thallium									
Tin									
Titanium									
Vanadium									
Zinc									

Associated samples MP1637: C7478-1F, C7478-2F, C7478-3F, C7478-5F, C7478-6F, C7478-8F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

QC Batch ID: MP1637 Methods: SW846 6010B
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 09/29/09

Metal	C7478-2F Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	22.1	25.5	15.4 (a)	0-10
Lead				
Lithium				
Magnesium				
Manganese	3.80	4.00	5.3	0-10
Molybdenum				
Nickel	anr			
Potassium				
Selenium				
Silicon				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				

Associated samples MP1637: C7478-1F, C7478-2F, C7478-3F, C7478-5F, C7478-6F, C7478-8F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

General Chemistry

6

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Perchlorate	GP1019/GN2330	4.0	0.0	ug/l	25	24.5	98.0	85-115%
Specific Conductivity	GN2318	1.0	0.0	umhos/cm				

Associated Samples:
Batch GN2318: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
Batch GP1019: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
(*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
Perchlorate	GP1019/GN2330	ug/l	25	23.4	4.6	

Associated Samples:
Batch GP1019: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Specific Conductivity	GN2318	C7478-1	umhos/cm	178	171	4.4	0-25%

Associated Samples:
Batch GN2318: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Perchlorate	GP1019/GN2330	C7478-2	ug/l	1.8 U	25	27.0	108.0	80-120%

Associated Samples:
Batch GP1019: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: C7478
Account: AJCAS - Aerojet
Project: SL205493018-Aerojet-Inactive Rancho Cordova Test Site

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Perchlorate	GP1019/GN2330	C7478-2	ug/l	1.8 U	25	26.6	1.5	15%

Associated Samples:
Batch GP1019: C7478-1, C7478-2, C7478-3, C7478-4, C7478-5, C7478-6, C7478-7, C7478-8
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

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Interpretation of Gene-Trac *Dehalococcoides* Test Results

Explanation of Test Certificate Results:

Upon completion of the Gene-Trac assay, the presence of *Dehalococcoides* DNA is assessed as either "Detected" or "Not Detected" based on interpretation of an electronic image of a DNA gel. Detects (gel bands) are then quantified using densitometry software and assigned a "band intensity percentage" using the relative intensity of the strongest bands obtained to the intensity of the positive control reaction. This value is in-turn used to assign a " Test intensity score" as follows:

- 0% of positive control "-" = Not Detected
- >0-1% of positive control "+/-" = Inconclusive
- >1-33% of positive control "+" = Detected
- >33-67% of positive control "++" = Detected
- >67-100% of positive control = "+++" Detected
- >100% of positive control = "++++" Detected
- Following a positive designation, the number of primer sets that effectively amplified sequences are listed. A test may be positive with 1 of 3, 2 of 3 or 3 of 3 primer sets.

Interpretation of Positive Results

Positive Gene-Trac test results ("*Dehalococcoides* DNA detected") indicate that genetic material from organisms belonging to the *Dehalococcoides* group was detected in site materials. A positive test result indicates favorable potential for complete dechlorination of chloroethene compounds.

Quantification: The strength of positive results is a parameter that can be useful in certain cases, but it must be noted, that Gene-Trac is only a semi-quantitative method and results are meant to be interpreted for presence or absence of *Dehalococcoides*. Customers may wish to use the semi-quantitative information provided by the test at their discretion. In general, the presence of a very high intensity score, for example, "++++" can be interpreted to represent a sample that has a higher concentration of *Dehalococcoides* organisms than a sample with a low intensity score of "+". Interpretation of less extreme differences between "+" and "++", for example, carries more uncertainty. If sampling is consistent between events, an increase in the intensity score might be used to assess an increase in the population density of *Dehalococcoides* over time.

The greater the number of primer sets that test positive for a particular sample (of the three used) provides increasing confidence that the characteristics of the organism detected is typical of *Dehalococcoides* organisms. Therefore, a positive test result which is "+++ (3 of 3 primer sets)" would be considered more indicative of a "typical" *Dehalococcoides* organism than would a result of "+++ (1 of 3 primers sets)". In certain cases where the concentration of *Dehalococcoides* DNA is very low (usually +), only the most efficient primer set produces Polymerize Chain Reaction (PCR) product. This scenario is not usually indicative of variants of *Dehalococcoides* organisms but rather the detection threshold of the less efficient primer sets.

Rule of thumb: high intensity scores with multiple primer sets e.g. ++++ (3 of 3 primers sets) provide the most conclusive results, while low intensity scores e.g. "+ (1 of 3 primer sets)", provide somewhat less conclusive evidence for the potential of indigenous organisms able to facilitate complete dechlorination to ethene.

Interpretation of Negative Result

Negative Gene-Trac results indicate that *Dehalococcoides* DNA was not detected in a sample. This indicates the site has a poor potential for complete dechlorination of chloroethene components. In certain cases, a negative test result may not indicate the absence of *Dehalococcoides* DNA at a site. For example:

1) The concentration of *Dehalococcoides* DNA may be below the detection limit of the assay. The detection limit for the assay is approximately 200-300 gene copies per liter, therefore, a very low level of *Dehalococcoides* DNA may not be detectable.

2) Due to sampling bias, a particular sample might not contain *Dehalococcoides* DNA, even at sites that contain this organism at other locations. Therefore, the absence of detectable *Dehalococcoides* DNA over several site samples is suggestive (but not conclusive) that *Dehalococcoides* organisms are absent from the entire site. Confidence in negative results is increased where a larger numbers of samples are assessed and where "non- *Dehalococcoides* Bacterial DNA" is detected in these samples. This indicates that DNA was successfully extracted from the samples but that *Dehalococcoides* DNA was not detectable. It might occur, that no DNA is extractable from a sample, simply because a particular sample contains no biomass and not because *Dehalococcoides* is actually absent from the site.

Rule of thumb: negative *Dehalococcoides* test results obtained where numerous samples are taken and where "non-*Dehalococcoides*" Bacterial DNA is detected, are more conclusive than negative results where few samples are tested and where Bacterial DNA is not detected.

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Test Results for Gene-Trac *Dehalococcoides* Assay

Customer Name: WNN Aerojet	**Test Reference Number:** DT-0114
Contact: Jamey Rosen	**Report Issued:** 22-Aug-03
Site Location: IRCTS, CA	**Site Sampling:** 14-Aug-03 **Sample(s) Received:** 16-Aug-03 **DNA Extraction:** 20-Aug-03
Telephone: (519) 822-2230	**Gel Image Numbers:** DHC-UP-0060/QIA-0013B/AG-0136A
Fax: (519) 822-3151	**Positive Control (+ve control):** Assay with Cloned *Dehalococcoides* 16S rRNA gene
E-mail: JRosen@GeoSyntec.com	**Negative Control (-ve control):** Assay with DNA extraction blank

Test Results:

Customer Sample ID	SiREM ID	Non-*Dehalococcoides* Bacterial DNA	*Dehalococcoides* Test, Intensity (% of Positive Control)	Intensity Score	Test Result: *Dehalococcoides* DNA
EW-1-0814-0720	DHC-0571	Detected	0%	-	Not Detected
EW-2-0814-0915	DHC-0572	Not Detected	0%	-	Not Detected
Not applicable	+ve control	Not applicable	100%	+++	Detected (3 of 3 primer sets)
Not applicable	-ve control	Not applicable	0%	-	Not Detected

The above results refer only to that portion of the sample tested with the Gene-Trac assay. The test is based on a polymerase chain reaction (PCR) test with three primer sets specific to DNA sequences in the 16S rRNA gene of *Dehalococcoides* organisms. A positive (+ to ++++) result indicates that genetic material (DNA) from a member of the *Dehalococcoides* group was detected. *Dehalococcoides* organisms are the only microorganisms proven to possess the necessary enzymes for the complete dechlorination of tetrachloroethene or trichloroethene to ethene. The presence of *Dehalococcoides* genetic material has been positively correlated to complete dechlorination of chlorinated ethenes at contaminated sites.

"Dehalococcoides Test Intensity" = quantitative assessment of electrophoresis band intensity of PCR product as a percentage of the corresponding positive control reaction. This value provides a semi-quantitative assessment of the amount of *Dehalococcoides* genetic material present in the sample.

While band intensity may reflect actual concentration of the target organism, Gene-Trac is a semi-quantitative method and is only recommended to determine the presence or absence of *Dehalococcoides* genetic material in the sample.

"Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)":++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), - = no detectable band (0%)

Analyst: **Jaimee Mariani,**
Laboratory Technologist

Reviewed by: **Philip Dennis, M.A.Sc.,**
Director, SiREM

Date: Aug. 29/03

Gene-Trac *Dehalococcoides* Case Narrative, Test DT-0114

Sample Condition:

SiREM received two ~1L ground water samples collected at IRCTS, CA on 14-Aug-2003. The samples arrived in a cooler with a measured temperature of 23°C and due to the blackout on 15-Aug-03 were stored as delivered until 18-Aug-03, after which they were stored at 4°C . Each sample was vacuum filtered for the preparation of the genomic DNA.

Sample Description:

Client Designation	SiREM Designation	*"Debris Description"	**Volume of Groundwater Utilized
EW-1-0814-0720	DHC-0571	Light Beige	1000 mL
EW-2-0814-0915	DHC-0572	None Visible	1000 mL

Notes:
*"Debris" refers to solid material (including biomass) remaining after vacuum filtration of groundwater through a 0.45 µM filter.
** Varying amounts of groundwater may be used up to a maximum depending on the amount of debris recovered or the capacity of the filter prior to clogging, maximum is 1L.

Test Notes:

- Genomic DNA extraction was performed on the samples on 20-Aug-03.
- A PCR reaction using a universal bacterial primer was performed on all samples on 20-Aug-03.
- The initial universal PCR was negative for all samples.
- DNA for each sample was further purified, and a second universal PCR was performed on 21-Aug-03. Sample DHC-0572 remained negative, most likely due to lack of biomass in the sample.
- Due to a weak positive in the universal primer negative control, a second universal control was repeated on 25-Aug-03 with 35 cycles to confirm previous results. The negative control exhibited no positive reaction after the second attempt.
- A *Dehalococcoides* specific PCR was performed on 21-Aug-03. All controls were normal.

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Test Results for Gene-Trac *Dehalococcoides* Assay

Customer Name: GeoSyntec Consultants	**Test Reference Number:** DT-0136
Contact: Jamey Rosen	**Report Issued:** 11-Dec-03
Site Location: Aerojet	**Site Sampling:** 25-Nov-03 **Sample(s) Received:** 27-Nov-03 **DNA Extraction:** 03-Dec-03
Telephone: (519) 822-2230 ext.226	**Gel Image Numbers:** DHC-UP-0072/AG-0161A
Fax: (519) 822-3151	**Positive Control (+ve control):** Assay with Cloned *Dehalococcoides* 16S rRNA gene
E-mail: jrosen@geosyntec.com	**Negative Control (-ve control):** Assay with DNA extraction blank

Test Results:

Customer Sample ID	SiREM ID	Non-*Dehalococcoides* Bacterial DNA	*Dehalococcoides* Test, Intensity (% of Positive Control)	Intensity Score	Test Result: *Dehalococcoides* DNA
WNN-RW-1	DHC-0696	Detected	0%	-	Not Detected
WNN-MW1	DHC-0697	Detected	37%	++	Detected (2 of 3 primer sets)
Not applicable	+ve control	Not applicable	100%	+++	Detected (3 of 3 primer sets)
Not applicable	-ve control	Not applicable	0%	-	Not Detected

The above results refer only to that portion of the sample tested with the Gene-Trac assay. The test is based on a polymerase chain reaction (PCR) test with three primer sets specific to DNA sequences in the 16S rRNA gene of *Dehalococcoides* organisms. A positive (+ to ++++) result indicates that genetic material (DNA) from a member of the *Dehalococcoides* group was detected. *Dehalococcoides* organisms are the only microorganisms proven to possess the necessary enzymes for the complete dechlorination of tetrachloroethene or trichloroethene to ethene. The presence of *Dehalococcoides* genetic material has been positively correlated to complete dechlorination of chlorinated ethenes at contaminated sites.

"Dehalococcoides Test Intensity" = quantitative assessment of electrophoresis band intensity of PCR product as a percentage of the corresponding positive control reaction. This value provides a semi-quantitative assessment of the amount of *Dehalococcoides* genetic material present in the sample.

While band intensity may reflect actual concentration of the target organism, Gene-Trac is a semi-quantitative method and is only recommended to determine the presence or absence of *Dehalococcoides* genetic material in the sample.

"Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)":++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), - = no detectable band (0%)

Analyst: _____ **Reviewed by:** _____ **Date:** Dec 16/03

Ximena Druar,
Laboratory Technologist

Philip Dennis, M.A.Sc.,
Technology Manager

Gene-Trac *Dehalococcoides* Case Narrative, Test DT-0136

Sample Condition:

SiREM received two -1L ground water samples collected at Aerojet on 27-Nov-2003. The samples arrived in a cooler with a measured temperature of 18.4°C and were stored at 4°C upon arrival in the laboratory. Each sample was vacuum filtered for the preparation of the genomic DNA.

Sample Description:

Client Designation	SiREM Designation	*"Debris Description"	**Volume of Groundwater Utilized
WNN-RW-1	DHC-0696	No visible debris	1000 mL
WNN-MW1	DHC-0697	Beige debris	1000 mL

Notes:
*"Debris" refers to solid material (including biomass) remaining after vacuum filtration of groundwater through a 0.45 µM filter.
** Varying amounts of groundwater may be used up to a maximum depending on the amount of debris recovered or the capacity of the filter prior to clogging, maximum is 1L.

Test Notes:

- Genomic DNA extraction was performed on the samples on 03-Dec-03.
- A PCR reaction using a universal bacterial primer was performed on all samples on 05-Dec-03. Positive results were obtained for both samples, indicating PCR amplifiable DNA was extracted from the samples.
- DHC specific PCR was performed on 08-Dec-03. All controls were normal, results included herein.

Chain-of-Custody Form

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No. 0001

Lab # S-0126

Page 1 of 1

Project Name: Aerojet	Project #: TR0018/18
Project Manager: Jamey Rosen	
Company:	
Address:	
Phone #:	Fax #:
Sampler's Signature: Scott Felton	Sampler's Printed Name: Scott Felton

Analysis

Preservative

Gene-Trac

Preservative Key
0. None
1. HCL
2. Other
3. Other
4. Other
5. Other
6. Other

Client Sample ID	Lab ID	Sampling Date	Sampling Time	Matrix	# of Containers	Gene-Trac	Other Information
WNN-RW-1		11/25/03	9:50	GW	1	X	
WNN-MW1		11/25/03	11:01	GW	1	X	

Sample Receipt

Cooler Condition:

Cooler Temperature: 18°

Custody Seals: Yes ☐ No ☒

Invoice Information

P.O. #

Bill To:

For Lab Use Only

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Scott Felton	Signature: Fed Ex	Signature:	Signature:	Signature:	Signature: Rita Schofield
Printed Name: Scott Felton	Printed Name:	Printed Name:	Printed Name:	Printed Name:	Printed Name: Rita Schofield
Firm: GeoSyntec	Firm:	Firm:	Firm:	Firm:	Firm: SiREM
Date/Time: 11/26/03 16:00	Date/Time: 11/26/03 16:00	Date/Time:	Date/Time:	Date/Time:	Date/Time: Nov 27/03 13:30

Distribution: White - Return to Originator: Yellow - Lab Copy: Pink - Retained by Client

In the absence of an executed agreement, submission of samples to SiREM implies consent for performance of analyses specified on this Chain-of-Custody form and agreement with the terms and conditions of the SiREM Laboratory Services Agreement. The entity submitting samples shall be responsible for payment in full for said analyses.

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Interpretation of Gene-Trac *Dehalococcoides* Test Results

Explanation of Test Certificate Results:

Upon completion of the Gene-Trac assay, the presence of *Dehalococcoides* DNA is assessed as either "Detected" or "Not Detected" based on interpretation of an electronic image of a DNA gel. Detects (gel bands) are then quantified using densitometry software and assigned a "band intensity percentage" using the relative intensity of the strongest bands obtained to the intensity of the positive control reaction. This value is in-turn used to assign a " Test intensity score" as follows:

- 0% of positive control "-" = Not Detected
- >0-1% of positive control "+/-" = Inconclusive
- >1-33% of positive control "+" = Detected
- >33-67% of positive control "++" = Detected
- >67-100% of positive control = "+++" Detected
- >100% of positive control = "++++" Detected
- Following a positive designation, the number of primer sets that effectively amplified sequences are listed. A test may be positive with 1 of 3, 2 of 3 or 3 of 3 primer sets.

Interpretation of Positive Results

Positive Gene-Trac test results ("*Dehalococcoides* DNA detected") indicate that genetic material from organisms belonging to the *Dehalococcoides* group was detected in site materials. A positive test result indicates favorable potential for complete dechlorination of chloroethene compounds.

Quantification: The strength of positive results is a parameter that can be useful in certain cases, but it must be noted, that Gene-Trac is only a semi-quantitative method and results are meant to be interpreted for presence or absence of *Dehalococcoides*. Customers may wish to use the semi-quantitative information provided by the test at their discretion. In general, the presence of a very high intensity score, for example, "++++" can be interpreted to represent a sample that has a higher concentration of *Dehalococcoides* organisms than a sample with a low intensity score of "+". Interpretation of less extreme differences between "+" and "++", for example, carries more uncertainty. If sampling is consistent between events, an increase in the intensity score might be used to assess an increase in the population density of *Dehalococcoides* over time.

The greater the number of primer sets that test positive for a particular sample (of the three used) provides increasing confidence that the characteristics of the organism detected is typical of *Dehalococcoides* organisms. Therefore, a positive test result which is "+++ (3 of 3 primer sets)" would be considered more indicative of a "typical" *Dehalococcoides* organism than would a result of "+++ (1 of 3 primers sets)". In certain cases where the concentration of *Dehalococcoides* DNA is very low (usually +), only the most efficient primer set produces Polymerize Chain Reaction (PCR) product. This scenario is not usually indicative of variants of *Dehalococcoides* organisms but rather the detection threshold of the less efficient primer sets.

Rule of thumb: high intensity scores with multiple primer sets e.g. ++++ (3 of 3 primers sets) provide the most conclusive results, while low intensity scores e.g. "+ (1 of 3 primer sets)", provide somewhat less conclusive evidence for the potential of indigenous organisms able to facilitate complete dechlorination to ethene.

Interpretation of Negative Result

Negative Gene-Trac results indicate that *Dehalococcoides* DNA was not detected in a sample. This indicates the site has a poor potential for complete dechlorination of chloroethene components. In certain cases, a negative test result may not indicate the absence of *Dehalococcoides* DNA at a site. For example:

1) The concentration of *Dehalococcoides* DNA may be below the detection limit of the assay. The detection limit for the assay is approximately 200-300 gene copies per liter, therefore, a very low level of *Dehalococcoides* DNA may not be detectable.

2) Due to sampling bias, a particular sample might not contain *Dehalococcoides* DNA, even at sites that contain this organism at other locations. Therefore, the absence of detectable *Dehalococcoides* DNA over several site samples is suggestive (but not conclusive) that *Dehalococcoides* organisms are absent from the entire site. Confidence in negative results is increased where a larger numbers of samples are assessed and where "non- *Dehalococcoides* Bacterial DNA" is detected in these samples. This indicates that DNA was successfully extracted from the samples but that *Dehalococcoides* DNA was not detectable. It might occur, that no DNA is extractable from a sample, simply because a particular sample contains no biomass and not because *Dehalococcoides* is actually absent from the site.

Rule of thumb: negative *Dehalococcoides* test results obtained where numerous samples are taken and where "non-*Dehalococcoides*" Bacterial DNA is detected, are more conclusive than negative results where few samples are tested and where Bacterial DNA is not detected.

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Test Results for Gene-Trac *Dehalococcoides* Assay

Customer Name: GeoSyntec Consultants	**Test Reference Number:** DT-0143
Contact: Jamey Rosen	**Report Issued:** 16-Jan-04
Site Location: Aerojet	**Site Sampling:** 16-Dec-03 **Sample(s) Received:** 17-Dec-03 **DNA Extraction:** 22-Dec-03
Telephone: (519) 822-2230 ext.226	**Gel Image Numbers:** DHC-UP-0075/AG-0169A
Fax: (519) 822-3151	**Positive Control (+ve control):** Assay with Cloned *Dehalococcoides* 16S rRNA gene
E-mail: jrosen@geosyntec.com	**Negative Control (-ve control):** Assay with DNA extraction blank

Test Results:

Customer Sample ID	SiREM ID	Non-*Dehalococcoides* Bacterial DNA	*Dehalococcoides* Test, Intensity (% of Positive Control)	Intensity Score	Test Result: *Dehalococcoides* DNA
WNN-RW-1	DHC-0739	Detected	0%	-	Not Detected
WNN-MW1	DHC-0740	Detected	0%	-	Not Detected
STSW-138A	DHC-0741	Detected	0%	-	Not Detected
Not applicable	+ve control	Not applicable	100%	+++	Detected (3 of 3 primer sets)
Not applicable	-ve control	Not applicable	0%	-	Not Detected

The above results refer only to that portion of the sample tested with the Gene-Trac assay. The test is based on a polymerase chain reaction (PCR) test with three primer sets specific to DNA sequences in the 16S rRNA gene of *Dehalococcoides* organisms. A positive (+ to ++++) result indicates that genetic material (DNA) from a member of the *Dehalococcoides* group was detected. *Dehalococcoides* organisms are the only microorganisms proven to possess the necessary enzymes for the complete dechlorination of tetrachloroethene or trichloroethene to ethene. The presence of *Dehalococcoides* genetic material has been positively correlated to complete dechlorination of chlorinated ethenes at contaminated sites.

"Dehalococcoides Test Intensity" = quantitative assessment of electrophoresis band intensity of PCR product as a percentage of the corresponding positive control reaction. This value provides a semi-quantitative assessment of the amount of *Dehalococcoides* genetic material present in the sample.

While band intensity may reflect actual concentration of the target organism, Gene-Trac is a semi-quantitative method and is only recommended to determine the presence or absence of *Dehalococcoides* genetic material in the sample.

"Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)":++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), - = no detectable band (0%)

Analyst: Ximena Druar **Reviewed by:** [signature] **Date:** Jan. 29/04

Ximena Druar,
Laboratory Technologist

Philip Dennis, M.A.Sc.,
Technology Manager

Gene-Trac *Dehalococcoides* Case Narrative, Test DT-0143

Sample Condition:

SiREM received three-1L ground water samples collected at Aerojet on 17-Dec-2003. The samples arrived in a cooler with a measured temperature of 4.5°C and were stored at 4°C upon arrival in the laboratory. Each sample was vacuum filtered for the preparation of the genomic DNA.

Sample Description:

Client Designation	SiREM Designation	*"Debris Description"	**Volume of Groundwater Utilized
WNN-RW-1	DHC-0739	Orange debris	1000 mL
WNN-MW1	DHC-0740	Brown debris	1000 mL
STSW-138A	DHC-0741	Orange debris	1000 mL

Notes:

*"Debris" refers to solid material (including biomass) remaining after vacuum filtration of groundwater through a 0.45 µM filter.

** Varying amounts of groundwater may be used up to a maximum depending on the amount of debris recovered or the capacity of the filter prior to clogging, maximum is 1L.

Test Notes:

- Genomic DNA extraction was performed on the samples on 22-Dec-03.
- A PCR reaction using a universal bacterial primer was performed on all samples on 05-Jan-04. Positive results were obtained for both samples, indicating PCR amplifiable DNA was extracted from the samples.
- DHC specific PCR was performed on 08-Jan-03. Due to a slight positive signal on the negative control the DHC specific PCR was repeated on 14-Jan-04. All controls were normal on the second PCR reaction, results included herein.

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Phone: 1-866-251-1747

Interpretation of Gene-Trac *Dehalococcoides* Test Results

Explanation of Test Certificate Results:

Upon completion of the Gene-Trac assay, the presence of *Dehalococcoides* DNA is assessed as either "Detected" or "Not Detected" based on interpretation of an electronic image of a DNA gel. Detects (gel bands) are then quantified using densitometry software and assigned a "band intensity percentage" using the relative intensity of the strongest bands obtained to the intensity of the positive control reaction. This value is in-turn used to assign a " Test intensity score" as follows:

- 0% of positive control "-" = Not Detected
- >0-1% of positive control "+/-" = Inconclusive
- >1-33% of positive control "+" = Detected
- >33-67% of positive control "++" = Detected
- >67-100% of positive control = "+++" Detected
- >100% of positive control = "++++" Detected
- Following a positive designation, the number of primer sets that effectively amplified sequences are listed. A test may be positive with 1 of 3, 2 of 3 or 3 of 3 primer sets.

Interpretation of Positive Results

Positive Gene-Trac test results ("*Dehalococcoides* DNA detected") indicate that genetic material from organisms belonging to the *Dehalococcoides* group was detected in site materials. A positive test result indicates favorable potential for complete dechlorination of chloroethene compounds.

Quantification: The strength of positive results is a parameter that can be useful in certain cases, but it must be noted, that Gene-Trac is only a semi-quantitative method and results are meant to be interpreted for presence or absence of *Dehalococcoides*. Customers may wish to use the semi-quantitative information provided by the test at their discretion. In general, the presence of a very high intensity score, for example, "++++" can be interpreted to represent a sample that has a higher concentration of *Dehalococcoides* organisms than a sample with a low intensity score of "+". Interpretation of less extreme differences between "+" and "++", for example, carries more uncertainty. If sampling is consistent between events, an increase in the intensity score might be used to assess an increase in the population density of *Dehalococcoides* over time.

The greater the number of primer sets that test positive for a particular sample (of the three used) provides increasing confidence that the characteristics of the organism detected is typical of *Dehalococcoides* organisms. Therefore, a positive test result which is "+++ (3 of 3 primer sets)" would be considered more indicative of a "typical" *Dehalococcoides* organism than would a result of "+++ (1 of 3 primers sets)". In certain cases where the concentration of *Dehalococcoides* DNA is very low (usually +), only the most efficient primer set produces Polymerize Chain Reaction (PCR) product. This scenario is not usually indicative of variants of *Dehalococcoides* organisms but rather the detection threshold of the less efficient primer sets.

Rule of thumb: high intensity scores with multiple primer sets e.g. ++++ (3 of 3 primers sets) provide the most conclusive results, while low intensity scores e.g. "+ (1 of 3 primer sets)", provide somewhat less conclusive evidence for the potential of indigenous organisms able to facilitate complete dechlorination to ethene.

Interpretation of Negative Result

Negative Gene-Trac results indicate that *Dehalococcoides* DNA was not detected in a sample. This indicates the site has a poor potential for complete dechlorination of chloroethene components. In certain cases, a negative test result may not indicate the absence of *Dehalococcoides* DNA at a site. For example:

1) The concentration of *Dehalococcoides* DNA may be below the detection limit of the assay. The detection limit for the assay is approximately 200-300 gene copies per liter, therefore, a very low level of *Dehalococcoides* DNA may not be detectable.

2) Due to sampling bias, a particular sample might not contain *Dehalococcoides* DNA, even at sites that contain this organism at other locations. Therefore, the absence of detectable *Dehalococcoides* DNA over several site samples is suggestive (but not conclusive) that *Dehalococcoides* organisms are absent from the entire site. Confidence in negative results is increased where a larger numbers of samples are assessed and where "non- *Dehalococcoides* Bacterial DNA" is detected in these samples. This indicates that DNA was successfully extracted from the samples but that *Dehalococcoides* DNA was not detectable. It might occur, that no DNA is extractable from a sample, simply because a particular sample contains no biomass and not because *Dehalococcoides* is actually absent from the site.

Rule of thumb: negative *Dehalococcoides* test results obtained where numerous samples are taken and where "non-*Dehalococcoides*" Bacterial DNA is detected, are more conclusive than negative results where few samples are tested and where Bacterial DNA is not detected.

Chain-of-Custody Form

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No. 0001

Lab # S-0139

Page 1 of 1

Project Name	Aerojet - WNN
Project #	TR0018
Project Manager	Jamey Rosen
Company	GeoSyntec
Address	130 Research Lane, Ste. 2
	Guelph, Ontario N1G 5G3 Canada
Phone #	519-822-2230
Fax #	519-822-3151
Sampler's Signature	Graham Bradner
Sampler's Printed Name	Graham Bradner

Analysis

Preservative

Gen Trace

Preservative Key
0. None
1. HCL
2. Other
3. Other
4. Other
5. Other
6. Other

Client Sample ID	Lab ID	Sampling Date	Sampling Time	Matrix	# of Containers												Other Information
WNN-RW-1		12/16/03	9:55	W	1	X											
WNN-MW-1		12/16/03	10:27	W	1	X											
STSW-138A		12/16/03	11:38	W	1	X											

Sample Receipt

Cooler Condition: Good

Cooler Temperature: 4.5°C

Custody Seals: Yes ☐ No ☒

Invoice Information

P.O. #

Bill To:

For Lab Use Only

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Graham Bradner	Signature: Rita Schofield	Signature	Signature	Signature	Signature
Printed Name: Graham Bradner	Printed Name: Rita Schofield	Printed Name	Printed Name	Printed Name	Printed Name
Firm: GeoSyntec	Firm: SiREM	Firm	Firm	Firm	Firm
Date/Time: 12/16/03 16:00	Date/Time: Dec 17/03 12:30	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator: Yellow - Lab Copy: Pink - Retained by Client

In the absence of an executed agreement, submission of samples to SiREM implies consent for performance of analyses specified on this Chain-of-Custody form and agreement with the terms and conditions of the SiREM Laboratory Services Agreement. The entity submitting samples shall be responsible for payment in full for said analyses.

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Interpretation of Gene-Trac *Dehalococcoides* Test Results

Explanation of Test Certificate Results:

Upon completion of the Gene-Trac assay, the presence of *Dehalococcoides* DNA is assessed as either "Detected" or "Not Detected" based on interpretation of an electronic image of a DNA gel. Detects (gel bands) are then quantified using densitometry software and assigned a "band intensity percentage" using the relative intensity of the strongest bands obtained to the intensity of the positive control reaction. This value is in-turn used to assign a " Test intensity score" as follows:

- 0% of positive control "-" = Not Detected
- >0-1% of positive control "+/-" = Inconclusive
- >1-33% of positive control "+" = Detected
- >33-67% of positive control "++" = Detected
- >67-100% of positive control = "+++" Detected
- >100% of positive control = "++++" Detected
- Following a positive designation, the number of primer sets that effectively amplified sequences are listed. A test may be positive with 1 of 3, 2 of 3 or 3 of 3 primer sets.

Interpretation of Positive Results

Positive Gene-Trac test results ("*Dehalococcoides* DNA detected") indicate that genetic material from organisms belonging to the *Dehalococcoides* group was detected in site materials. A positive test result indicates favorable potential for complete dechlorination of chloroethene compounds.

Quantification: The strength of positive results is a parameter that can be useful in certain cases, but it must be noted, that Gene-Trac is only a semi-quantitative method and results are meant to be interpreted for presence or absence of *Dehalococcoides*. Customers may wish to use the semi-quantitative information provided by the test at their discretion. In general, the presence of a very high intensity score, for example, "++++" can be interpreted to represent a sample that has a higher concentration of *Dehalococcoides* organisms than a sample with a low intensity score of "+". Interpretation of less extreme differences between "+" and "++", for example, carries more uncertainty. If sampling is consistent between events, an increase in the intensity score might be used to assess an increase in the population density of *Dehalococcoides* over time.

The greater the number of primer sets that test positive for a particular sample (of the three used) provides increasing confidence that the characteristics of the organism detected is typical of *Dehalococcoides* organisms. Therefore, a positive test result which is "+++ (3 of 3 primer sets)" would be considered more indicative of a "typical" *Dehalococcoides* organism than would a result of "+++ (1 of 3 primers sets)". In certain cases where the concentration of *Dehalococcoides* DNA is very low (usually +), only the most efficient primer set produces Polymerize Chain Reaction (PCR) product. This scenario is not usually indicative of variants of *Dehalococcoides* organisms but rather the detection threshold of the less efficient primer sets.

Rule of thumb: high intensity scores with multiple primer sets e.g. ++++ (3 of 3 primers sets) provide the most conclusive results, while low intensity scores e.g. "+ (1 of 3 primer sets)", provide somewhat less conclusive evidence for the potential of indigenous organisms able to facilitate complete dechlorination to ethene.

Interpretation of Negative Result

Negative Gene-Trac results indicate that *Dehalococcoides* DNA was not detected in a sample. This indicates the site has a poor potential for complete dechlorination of chloroethene components. In certain cases, a negative test result may not indicate the absence of *Dehalococcoides* DNA at a site. For example:

1) The concentration of *Dehalococcoides* DNA may be below the detection limit of the assay. The detection limit for the assay is approximately 200-300 gene copies per liter, therefore, a very low level of *Dehalococcoides* DNA may not be detectable.

2) Due to sampling bias, a particular sample might not contain *Dehalococcoides* DNA, even at sites that contain this organism at other locations. Therefore, the absence of detectable *Dehalococcoides* DNA over several site samples is suggestive (but not conclusive) that *Dehalococcoides* organisms are absent from the entire site. Confidence in negative results is increased where a larger numbers of samples are assessed and where "non- *Dehalococcoides* Bacterial DNA" is detected in these samples. This indicates that DNA was successfully extracted from the samples but that *Dehalococcoides* DNA was not detectable. It might occur, that no DNA is extractable from a sample, simply because a particular sample contains no biomass and not because *Dehalococcoides* is actually absent from the site.

Rule of thumb: negative *Dehalococcoides* test results obtained where numerous samples are taken and where "non-*Dehalococcoides*" Bacterial DNA is detected, are more conclusive than negative results where few samples are tested and where Bacterial DNA is not detected.

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Test Results for Gene-Trac *Dehalococcoides* Assay

Customer Name: GeoSyntec Consultants	**Test Reference Number:** DT-0157 **Shipment Reference Number:** S-0163
Contact: Jamey Rosen	**Report Issued:** 27-Feb-04
Site Location: Aerojet	**Site Sampling:** 10-Feb-04 **Sample(s) Received:** 11-Feb-04 **DNA Extraction:** 18-Feb-04
Telephone: (519) 822-2230 ext.226	**Gel Image Numbers:** DHC-UP-0086, QIA-0031, AG-0185 C
Fax: (519) 822-3151	**Positive Control (+ve control):** Assay with Cloned *Dehalococcoides* 16S rRNA gene
E-mail: jrosen@geosyntec.com	**Negative Control (-ve control):** Assay with DNA extraction blank

Test Results:

Customer Sample ID	SiREM ID	Non-*Dehalococcoides* Bacterial DNA	*Dehalococcoides* Test, Intensity (% of Positive Control)	Intensity Score	Test Result: *Dehalococcoides* DNA
STSW-166	DHC-0854	Detected	0%	-	Not Detected
Not applicable	+ve control	Not applicable	100%	+++	Detected (3 of 3 primer sets)
Not applicable	-ve control	Not applicable	0%	-	Not Detected

The above results refer only to that portion of the sample tested with the Gene-Trac assay. The test is based on a polymerase chain reaction (PCR) test with three primer sets specific to DNA sequences in the 16S rRNA gene of *Dehalococcoides* organisms. A positive (+ to ++++) result indicates that genetic material (DNA) from a member of the *Dehalococcoides* group was detected. *Dehalococcoides* organisms are the only microorganisms proven to possess the necessary enzymes for the complete dechlorination of tetrachloroethene or trichloroethene to ethene. The presence of *Dehalococcoides* genetic material has been positively correlated to complete dechlorination of chlorinated ethenes at contaminated sites.

"Dehalococcoides Test Intensity" = quantitative assessment of electrophoresis band intensity of PCR product as a percentage of the corresponding positive control reaction. This value provides a semi-quantitative assessment of the amount of *Dehalococcoides* genetic material present in the sample.

While band intensity may reflect actual concentration of the target organism, Gene-Trac is a semi-quantitative method and is only recommended to determine the presence or absence of *Dehalococcoides* genetic material in the sample.

"Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)":++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), - = no detectable band (0%)

Analyst: _____ **Reviewed by:** _____ **Date:** Mar. 23/04

Ximena Druar,
Laboratory Technologist

Philip Dennis, M.A.Sc.,
Technology Manager

Gene-Trac *Dehalococcoides* Case Narrative, Test DT-0157

Sample Condition:

SiREM received one -1L ground water sample from Aerojet on 11-Feb-2004. The sample arrived in a cooler with a measured temperature of 4.3°C and was stored at 4°C upon arrival in the laboratory. The sample was vacuum filtered for the preparation of the genomic DNA.

Sample Description:

Customer Sample ID	SiREM ID	*"Debris Description"	**Volume of Groundwater Utilized
STSW-166	DHC-0854	Rusty orange debris	1000 mL

Notes:

*"Debris" refers to solid material (including biomass) remaining after vacuum filtration of groundwater through a 0.45 µM filter.

** Varying amounts of groundwater may be used up to a maximum depending on the amount of debris recovered or the capacity of the filter prior to clogging, maximum is 1L.

Test Notes:

- Genomic DNA extraction was performed on the samples on 18-Feb-04.
- A PCR reaction using a universal bacterial primer was performed on the sample on 18-Feb-04.
- The initial universal PCR was negative for the sample.
- DNA for the sample was further purified, and a second universal PCR was performed on 19-Febl-04. On the second attempt a positive result was obtained for the sample indicating that PCR amplifiable DNA was extracted from the sample.
- DHC specific PCR was performed on 26-Feb-04. All controls were normal, results included herein.

Gene-Trac *Dehalococcoides* Case Narrative Addendum Test DT-0157

Quantitative PCR Test Results:

As part of a technology verification study the samples submitted were also tested using quantitative PCR with one primer set, these results are included below for use at the client's discretion. Note that due to detection limit and primer specificity differences, quantitative PCR results may not strictly correspond with standard Gene-Trac results.

Quantitative PCR Test Results

Customer Sample ID	SiREM ID	*Dehalococcoides* 16 S rRNA gene copies/L
STSW-166	DHC-0854	Not Detected (<7500)

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№ 0087

Lab # S-0163

Page 1 of 1

Project Name	Aerojet
Project #	TR0018/16
Project Manager	Jamey Rosen
Company	GeoSyntec
Address	
Phone #	
Fax #	
Sampler's Signature	Scott Felton
Sampler's Printed Name	Scott Felton

Analysis

Preservative

Gasoline TPH

Preservative Key
0. None
1. HCL
2. Other
3. Other
4. Other
5. Other
6. Other

Client Sample ID	Lab ID	Sampling Date	Sampling Time	Matrix	# of Containers	Other Information
STSW-166		2/10/04			1	

Sample Receipt

Cooler Condition: Good

Cooler Temperature: 4.3°C

Custody Seals: Yes ☒ No ☐

Invoice Information

P.O. #

Bill To:

For Lab Use Only

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Scott Felton	Signature: Danielle Rowlands	Signature	Signature	Signature	Signature
Printed Name: Scott Felton	Printed Name: Danielle Rowlands	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm: SiREM	Firm	Firm	Firm	Firm
Date/Time: 2/10/04 16:00	Date/Time: 2/11/04 15:30	Date/Time	Date/Time	Date/Time	Date/Time

Distribution: White - Return to Originator: Yellow - Lab Copy: Pink - Retained by Client

In the absence of an executed agreement, submission of samples to SiREM implies consent for performance of analyses specified on this Chain-of-Custody form and agreement

GEOSYNTEC CONSULTANTS

LETTER OF TRANSMITTAL

To: Rodney Fricke
Aerojet

Date: 29-Mar-04
From: Jamey Rosen
Project & Task No.:

Via:
- ☐ Messenger
- ☒ Mail
- ☐ Courier
- ☐ E-Mail
- ☐ Facsimile

For:
- ☐ Approval
- ☒ Your Use
- ☐ As Requested
- ☐ Review
- ☐ For Comment
- ☐ _____

Number of Copies	Drawing Number	Date	Description
2			SiREM laboratory reports for WNN

Remarks: _____

Copy to: _____
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From: _____
GeoSyntec Consultants

130 Research Lane, Suite 2
Guelph, Ontario, CANADA N1G 5G3
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Guelph, Ontario N1G 5G3
Phone: (519) 822-2265
Fax: (519) 822-3151

Test Results for Gene-Trac *Dehalococcoides* Assay

Customer Contact: Jamey Rosen

SiREM Reference #: S-0224

Project : AeroJet

Report Issued: 17-May-04

Date Sampled: 27-Apr-04

Gel Image Numbers: DHC-0101, QIA-0036, AG-0212 A

Date Received: 29-Apr-04

Matrix: Groundwater

The Gene-Trac *Dehalococcoides* (DHC) test is a polymerase chain reaction (PCR) assay used to detect the 16S ribosomal ribonucleic acid (rRNA) gene of DHC organisms. A test result of "Detected" indicates that deoxyribonucleic acid (DNA) from a member of the DHC group is present in the sample. DHC organisms are the only microorganisms known to be capable of mediating complete dechlorination of chloroethenes (i.e., tetrachloroethene, trichloroethene, *cis*-dichloroethene, vinyl chloride) to ethene. The presence of DHC DNA has been correlated with complete dechlorination of chlorinated ethenes at contaminated sites.

Results Summary

Customer Sample ID	SiREM ID	Date Extracted	Date Analyzed	[1]Test Intensity (% of Positive Control)	[2]Intensity Score	[3]Estimated *Dehalococcoides* 16S rRNA Gene Copies Per Liter	Test Result *Dehalococcoides* DNA
WNN-EW-1	DHC-0981	03-May-04	13-May-04	0%	-	$<10^2$	Not Detected
WNN-MW1	DHC-0982	03-May-04	13-May-04	50%	++	10^4-10^6	Detected
WNN-EW-2	DHC-0983	03-May-04	13-May-04	0%	-	$<10^2$	Not Detected
WNN-138A	DHC-0984	03-May-04	13-May-04	0%	-	$<10^2$	Not Detected

Results Notes:

[1] "Test Intensity" = quantitative assessment of electrophoresis band intensity of PCR product as a percentage of the corresponding positive control reaction. This value provides a semi-quantitative assessment of the amount of *Dehalococcoides* genetic material present in the sample.

[2] "Intensity Score", categorizes PCR product quantity based on the "intensity (% of positive control)":++++ = Very high band intensity (greater than 100% of positive control), +++ = high band intensity (67-100%), ++ moderate band intensity (34-66%) + = low band intensity (4-33%), -/+ = inconclusive (1-3%), − = no detectable band (0%)

[3] "Estimated 16S rRNA gene copies per Liter", ranges based on historical comparisons of parallel samples tested with standard Gene-Trac and Quantitative Gene-Trac tests.

Detailed Test Parameters

Sample ID	Groundwater Sample Volume Used (Liter)	[1] DNA Extraction/ PCR Control	[2] Primer Set Reaction			Comments (Where Applicable)
			1	2	3	
WNN-EW-1	1.0	Positive	x	x	x	
WNN-MW1	1.0	Positive	✓	☑	✓	
WNN-EW-2	1.0	Negative	x	x	x	PCR amplifiable DNA not extractable from sample
WNN-138A	1.0	Positive	x	x	x	

Laboratory Controls	Description	[2] Primer Set Reaction			Comments
		1	2	3	
Positive Control	Assay with cloned DHC gene 10^5 copies (Lot # 22041044574)	✓	✓	✓	Normal
Positive Control	KB-1 Genomic DNA	✓	✓	✓	Normal
DNA extraction blank	DNA extraction sterile water (DB-0147)	x	x	x	Normal

Notes:
DHC - *Dehalococcoides*
16 S rRNA Gene - 16 S ribosomal ribonucleic acid gene
DNA - Deoxyribonucleic Acid
PCR - Polymerase Chain Reaction
µg - micrograms
na – not applicable
[1] Assessment for presence of PCR amplifiable Bacteria DNA using universal primers.
[2] PCR Primers that exhibited positive or negative reactions
✓- primer set positive
x - primer set negative
☑ - primer set used for semi-quantitative test result of DHC in sample (strongest reaction)

Analyst: _____
Ximena Druar B.Sc.
Laboratory Technologist

Reviewed by: _____
Philip Dennis, M.A.Sc.
Technology Manager

California Laboratory Services

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

August 13, 2003

CLS Work Order #: CMH0084
COC #: 39476

Scott Felton
Geo Syntec Consultants
1500 Newell Ave., Ste. 800
Walnut Creek, CA 94596

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 08/05/03 12:30. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

08/13/03 15:26

Geo Syntec Consultants 1500 Newell Ave., Ste. 800 Walnut Creek, CA 94596	Project: Aerojet-WNN Project Number: [none] Project Manager: Scott Felton	**CLS Work Order #: CMH0084** COC #: 39476

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
39B-0804-1445 (CMH0084-01) Water	**Sampled: 08/04/03 14:45**		**Received: 08/05/03 12:30**						
Chlorate	ND	0.020	mg/L	1	CH30527	08/05/03	08/05/03	EPA 300.0	
39A-0804-1720 (CMH0084-02) Water	**Sampled: 08/04/03 17:20**		**Received: 08/05/03 12:30**						
Chlorate	**0.040**	0.020	mg/L	1	CH30527	08/05/03	08/05/03	EPA 300.0	
138A-0805-0830 (CMH0084-03) Water	**Sampled: 08/05/03 08:30**		**Received: 08/05/03 12:30**						
Chlorate	ND	0.020	mg/L	1	CH30527	08/05/03	08/05/03	EPA 300.0	
MW1-0805-0845 (CMH0084-04) Water	**Sampled: 08/05/03 08:45**		**Received: 08/05/03 12:30**						
Chlorate	**0.032**	0.020	mg/L	1	CH30527	08/05/03	08/05/03	EPA 300.0	
38A-0805-1045 (CMH0084-05) Water	**Sampled: 08/05/03 10:45**		**Received: 08/05/03 12:30**						
Chlorate	ND	0.020	mg/L	1	CH30527	08/05/03	08/05/03	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

08/13/03 15:26

Geo Syntec Consultants 1500 Newell Ave., Ste. 800 Walnut Creek, CA 94596	Project: Aerojet-WNN Project Number: [none] Project Manager: Scott Felton	**CLS Work Order #: CMH0084** COC #: 39476

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 02, 2003

CLS Work Order #: CMH0406
COC #:

Scott Felton
Geo Syntec Consultants
1500 Newell Ave., Ste. 800
Walnut Creek, CA 94596

Project Name: TR0018

Enclosed are the results of analyses for samples received by the laboratory on 08/14/03 10:00. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

09/02/03 10:17

Geo Syntec Consultants	Project: TR0018	
1500 Newell Ave., Ste. 800	Project Number: 18	***CLS Work Order #: CMH0406***
Walnut Creek, CA 94596	Project Manager: Scott Felton	COC #:

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
EW-1-0814-0720 (CMH0406-01) Water	**Sampled: 08/14/03 07:20**		**Received: 08/14/03 10:00**						
Chlorate	**0.021**	0.020	mg/L	1	CH31314	08/28/03	08/28/03	EPA 300.0	
EW-2-0814-0915 (CMH0406-02) Water	**Sampled: 08/14/03 09:15**		**Received: 08/14/03 10:00**						
Chlorate	**0.020**	0.020	mg/L	1	CH31314	08/28/03	08/28/03	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

09/02/03 10:17

Geo Syntec Consultants	Project: TR0018	
1500 Newell Ave., Ste. 800	Project Number: 18	***CLS Work Order #: CMH0406***
Walnut Creek, CA 94596	Project Manager: Scott Felton	COC #:

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

September 11, 2003

CLS Work Order #: CMI0221
COC #: 31221

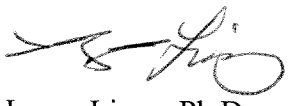
Scott Felton
Geo Syntec Consultants
1500 Newell Ave., Ste. 800
Walnut Creek, CA 94596

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 09/08/03 14:50. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,



James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

09/11/03 12:11

Geo Syntec Consultants	Project: Aerojet-WNN	***CLS Work Order #: CMI0221***
1500 Newell Ave., Ste. 800	Project Number: TR0018/18	
Walnut Creek, CA 94596	Project Manager: Scott Felton	COC #: 31221

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
138-0908-1017 (CMI0221-01) Water	**Sampled: 09/08/03 10:17**		**Received: 09/08/03 14:50**						
Chlorate	**0.045**	0.020	mg/L	1	CI30903	09/09/03	09/10/03	EPA 300.0	
MW-1-0908-1112 (CMI0221-02) Water	**Sampled: 09/08/03 11:12**		**Received: 09/08/03 14:50**						
Chlorate	ND	0.020	mg/L	1	CI30903	09/09/03	09/10/03	EPA 300.0	
EW-1-0908-1450 (CMI0221-03) Water	**Sampled: 09/08/03 14:50**		**Received: 09/08/03 14:50**						
Chlorate	**0.021**	0.020	mg/L	1	CI30903	09/09/03	09/10/03	EPA 300.0	
EW-2-0908-1415 (CMI0221-04) Water	**Sampled: 09/08/03 14:15**		**Received: 09/08/03 14:50**						
Chlorate	**0.020**	0.020	mg/L	1	CI30903	09/09/03	09/10/03	EPA 300.0	
RW-1-0908-1332 (CMI0221-05) Water	**Sampled: 09/08/03 13:32**		**Received: 09/08/03 14:50**						
Chlorate	ND	0.020	mg/L	1	CI30903	09/09/03	09/10/03	EPA 300.0	

CLS - Labs

CHAIN OF CUSTODY

CLS ID No.: CMI0221 LOG NO. 31221

REPORT TO:

NAME AND ADDRESS: GeoSyntec Consultants
1500 Newell Ave., Suite 800
Walnut Creek, CA 94596

PROJECT MANAGER: Scott Felton PHONE#: 925-943-3039

PROJECT NAME: Aerojet - WNN

SAMPLED BY: Scott Felton

JOB DESCRIPTION:

SITE LOCATION:

CLIENT JOB NUMBER: TR0018/18

DESTINATION LABORATORY

[X] CLS (916) 638-7301
3249 FITZGERALD RD.
RANCHO CORDOVA, CA.
95742

[ ] OTHER

PRESERVATIVES: Chlorate

ANALYSIS REQUESTED

FIELD CONDITIONS:

COMPOSITE:

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE
9/8/03	10:17	138-0908-1017	GW	1	
	11:12	MW-1-0908-1112		1	
	14:50	EW-1-0908-1450		1	
	14:15	EW-2-0908-1415		1	
	13:32	RW-1-0908-1332		1	

TURN AROUND TIME

1 DAY	2 DAY	5 DAY	10 DAY
			X
			X
			X
			X
			X

SPECIAL INSTRUCTIONS

INVOICE TO:

P.O. #

QUOTE #

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4)

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
Scott Felton	Scott Felton / GeoSyntec	9/8/03 / 15:40		

REC'D AT LAB BY:

DATE / TIME: 090803 / 14:50

CONDITIONS / COMMENTS:

SHIPPED BY: [ ] FED X [ ] UPS [ ] OTHER _____ AIR BILL #

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

October 07, 2003

CLS Work Order #: CMI0976
COC #: 42266

Scott Felton
Geo Syntec Consultants
1500 Newell Ave., Ste. 800
Walnut Creek, CA 94596

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 09/29/03 13:34. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

10/07/03 15:03

Geo Syntec Consultants 1500 Newell Ave., Ste. 800 Walnut Creek, CA 94596	Project: Aerojet-WNN Project Number: [none] Project Manager: Scott Felton	**CLS Work Order #: CMI0976** COC #: 42266

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
RW-1-0929-0920 (CMI0976-01) Water	**Sampled: 09/29/03 09:20**		**Received: 09/29/03 13:34**						
Chlorate	ND	0.020	mg/L	1	CJ30111	10/01/03	10/01/03	EPA 300.0	
138-0929-1008 (CMI0976-02) Water	**Sampled: 09/29/03 10:08**		**Received: 09/29/03 13:34**						
Chlorate	ND	0.020	mg/L	1	CJ30111	10/01/03	10/01/03	EPA 300.0	
MW-1-0929-1105 (CMI0976-03) Water	**Sampled: 09/29/03 11:05**		**Received: 09/29/03 13:34**						
Chlorate	ND	0.020	mg/L	1	CJ30111	10/01/03	10/01/03	EPA 300.0	
EW-1-0929-1245 (CMI0976-04) Water	**Sampled: 09/29/03 12:45**		**Received: 09/29/03 13:34**						
Chlorate	ND	0.020	mg/L	1	CJ30111	10/01/03	10/01/03	EPA 300.0	
EW-2-0929-1310 (CMI0976-05) Water	**Sampled: 09/29/03 13:10**		**Received: 09/29/03 13:34**						
Chlorate	ND	0.020	mg/L	1	CJ30111	10/01/03	10/01/03	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

10/07/03 15:03

Geo Syntec Consultants 1500 Newell Ave., Ste. 800 Walnut Creek, CA 94596	Project: Aerojet-WNN Project Number: [none] Project Manager: Scott Felton	**CLS Work Order #: CMI0976** COC #: 42266

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

November 13, 2003

CLS Work Order #: CMJ1066
COC #: 43364

Jamey Rosen
Geo Syntec Consultants- Canada
130 Research Lane, Ste. 2
Guelph, ONTARIO, CANADA N1G5G3

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 10/29/03 11:55. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

11/13/03 14:33

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	***CLS Work Order #: CMJ1066*** COC #: 43364

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-MW1 (CMJ1066-01) GW	**Sampled: 10/29/03 09:47**	**Received: 10/29/03 11:55**							
Chlorate	ND	0.020	mg/L	1	CK30808	11/08/03	11/11/03	EPA 300.0	
STSW-138A (CMJ1066-02) GW	**Sampled: 10/29/03 10:41**	**Received: 10/29/03 11:55**							
Chlorate	ND	0.020	mg/L	1	CK30808	11/08/03	11/11/03	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

11/13/03 14:33

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	***CLS Work Order #: CMJ1066*** COC #: 43364

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

November 13, 2003

CLS Work Order #: CMK0021
COC #: 42265

Jamey Rosen
Geo Syntec Consultants- Canada
130 Research Lane, Ste. 2
Guelph, ONTARIO, CANADA N1G5G3

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 11/03/03 13:25. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

11/13/03 15:32

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CMK0021** COC #: 42265

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-RW-1 (CMK0021-01) Water	**Sampled: 11/03/03 09:50 Received: 11/03/03 13:25**								
Chlorate	ND	0.020	mg/L	1	CK30808	11/08/03	11/11/03	EPA 300.0	
WNN-EW-2 (CMK0021-02) Water	**Sampled: 11/03/03 12:05 Received: 11/03/03 13:25**								
Chlorate	ND	0.020	mg/L	1	CK30808	11/08/03	11/11/03	EPA 300.0	
WNN-EW-1 (CMK0021-03) Water	**Sampled: 11/03/03 12:50 Received: 11/03/03 13:25**								
Chlorate	ND	0.020	mg/L	1	CK30808	11/08/03	11/11/03	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

11/13/03 15:32

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CMK0021** COC #: 42265

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

January 12, 2004

CLS Work Order #: CNA0084
COC #: 42268

Jamey Rosen
Geo Syntec Consultants- Canada
130 Research Lane, Ste. 2
Guelph, ONTARIO, CANADA N1G5G3

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 01/06/04 13:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CALIFORNIA LABORATORY SERVICES

01/12/04 15:40

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CNA0084** COC #: 42268

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-RW-1 (CNA0084-01) Water	**Sampled: 01/06/04 09:50**		**Received: 01/06/04 13:45**						
Chlorate	ND	0.020	mg/L	1	CN00100	01/07/04	01/07/04	EPA 300.0	
WNN-MW1 (CNA0084-02) Water	**Sampled: 01/06/04 10:32**		**Received: 01/06/04 13:45**						
Chlorate	ND	0.020	mg/L	1	CN00100	01/07/04	01/07/04	EPA 300.0	
STSW-138A (CNA0084-03) Water	**Sampled: 01/06/04 11:41**		**Received: 01/06/04 13:45**						
Chlorate	ND	0.020	mg/L	1	CN00100	01/07/04	01/07/04	EPA 300.0	
WNN-EW-1 (CNA0084-04) Water	**Sampled: 01/06/04 12:10**		**Received: 01/06/04 13:45**						
Chlorate	ND	0.020	mg/L	1	CN00100	01/07/04	01/07/04	EPA 300.0	
WNN-EW-2 (CNA0084-05) Water	**Sampled: 01/06/04 12:40**		**Received: 01/06/04 13:45**						
Chlorate	ND	0.020	mg/L	1	CN00100	01/07/04	01/07/04	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

01/12/04 15:40

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CNA0084** COC #: 42268

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

CALIFORNIA LABORATORY SERVICES

3249 Fitzgerald Road Rancho Cordova, CA 95742

April 14, 2004

CLS Work Order #: CNC1065
COC #: 42271

Jamey Rosen
Geo Syntec Consultants- Canada
130 Research Lane, Ste. 2
Guelph, ONTARIO, CANADA N1G5G3

Project Name: Aerojet-WNN

Enclosed are the results of analyses for samples received by the laboratory on 03/31/04 13:32. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that the results are in compliance both technically and for completeness.

Analytical results are attached to this letter. Please call if we can provide additional assistance.

Sincerely,

James Liang, Ph.D.
Laboratory Director

CA DOHS ELAP Accreditation/Registration number 1233

CLS - Labs

CHAIN OF CUSTODY

CLS ID No.: 040105

LOG NO. 42271

REPORT TO:

NAME AND ADDRESS: GeoSyntec Consultants
130 Research Lane, Ste 2
Guelph, Ontario N1G 5G3

PROJECT MANAGER: Jamey Rosen PHONE#: 519-822-2230

PROJECT NAME: Aerojet

SAMPLED BY: Scott Felton

JOB DESCRIPTION:

SITE LOCATION:

CLIENT JOB NUMBER:

DESTINATION LABORATORY

☒ CLS (916) 638-7301
3249 FITZGERALD RD.
RANCHO CORDOVA, CA.
95742

☐ OTHER

PRESERVATIVES

ANALYSIS REQUESTED

Chlorate

FIELD CONDITIONS:

COMPOSITE:

TURN AROUND TIME

1 DAY	2 DAY	5 DAY	10 DAY
			X

SPECIAL INSTRUCTIONS

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX	CONTAINER NO.	CONTAINER TYPE	Chlorate
3/31/04	9:55	WNW-RW-1	GW			X
	10:45	WNW-EW-1				X
	10:35	WNW-EW-2				X
	10:30	WNW-MW1				X
	11:19	STSW-138A				X

INVOICE TO:

P.O. #

QUOTE #

SUSPECTED CONSTITUENTS

SAMPLE RETENTION TIME

PRESERVATIVES: (1) HCL (2) HNO_3 (3) = COLD (4)

RELINQUISHED BY (SIGN)	PRINT NAME / COMPANY	DATE / TIME	RECEIVED BY (SIGN)	PRINT NAME / COMPANY
Scott Felton	Scott Felton / GeoSyntec	3/31/04 13:32		

REC'D AT LAB BY: [signature] DATE / TIME: 3-31-4 1352

CONDITIONS / COMMENTS:

SHIPPED BY: ☐ FED X ☐ UPS ☐ OTHER _____ AIR BILL #

CALIFORNIA LABORATORY SERVICES

04/14/04 11:12

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CNC1065** COC #: 42271

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
WNN-RW-1 (CNC1065-01) GW	**Sampled: 03/31/04 09:55**	**Received: 03/31/04 13:32**							
Chlorate	ND	0.020	mg/L	1	CN02686	04/05/04	04/05/04	EPA 300.0	
WNN-EW-1 (CNC1065-02) GW	**Sampled: 03/31/04 10:45**	**Received: 03/31/04 13:32**							
Chlorate	ND	0.020	mg/L	1	CN02686	04/05/04	04/05/04	EPA 300.0	
WNN-EW-2 (CNC1065-03) GW	**Sampled: 03/31/04 10:35**	**Received: 03/31/04 13:32**							
Chlorate	ND	0.020	mg/L	1	CN02686	04/05/04	04/05/04	EPA 300.0	
WNN-MW1 (CNC1065-04) GW	**Sampled: 03/31/04 10:30**	**Received: 03/31/04 13:32**							
Chlorate	ND	0.020	mg/L	1	CN02686	04/05/04	04/05/04	EPA 300.0	
STSW-138A (CNC1065-05) GW	**Sampled: 03/31/04 11:19**	**Received: 03/31/04 13:32**							
Chlorate	ND	0.020	mg/L	1	CN02686	04/05/04	04/05/04	EPA 300.0	

CALIFORNIA LABORATORY SERVICES

04/14/04 11:12

Geo Syntec Consultants- Canada 130 Research Lane, Ste. 2 Guelph, ONTARIO, CANADA N1G5G3	Project: Aerojet-WNN Project Number: [none] Project Manager: Jamey Rosen	**CLS Work Order #: CNC1065** COC #: 42271

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Aerojet Environmental Laboratory

RECEIVED
NOV 2 5 2003

Fricke, Rodney A

From: Fricke, Rodney A
Sent: Friday, November 14, 2003 11:54 AM
To: Jamey Rosen (E-mail); Scott Felton (E-mail)
Cc: John Gallinatti (E-mail); Evan Cox (E-mail)
Subject: WNN Data

I have received additional data for the project, as provided in the attached spreadsheet. Please provide field measurements and laboratory results for samples submitted to your laboratories. I'll send copies of the reports from the Aerojet laboratory.

Bromide was definitely captured by EW-2 and is being distributed again by RW-1, as shown by increasing concentrations at MW-1. I think we might have adequate hydraulic control between RW-1 and EW-2. Bromide has not yet appeared in EW-1, which suggest we may not be pumping enough at EW-1.

Iron and manganese concentrations appear to have stablized.



WDR-WQData.xls

Rodney A. Fricke
Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000
916/355-5161
-6145 FAX

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 27 AUG 2003

EDL # 200113384
Primary # 39A-0804-1720
Description 39A-0804-1720
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/04/03 17:20

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 14:24	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	7.7	mg/l	0.050	0.025	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	2.1	mg/l	0.050	0.025	
Phosphate	0.10	mg/l	0.10	0.050	
Sulfate	11	mg/l	0.050	0.025	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/13/03 16:25	E70080	PRIMARY	50

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	4300	ug/l	200	50	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/20/03 13:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.024	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.017	mg/l	0.0050	0.0025	
Calcium	16	mg/l	0.14	0.070	
Magnesium	9.5	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 27 AUG 2003

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL - Method Detection Limit
PQL - Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 27 AUG 2003

EDL # 200113387
Primary # 38A-0805-1045
Description 38A-0805-1045
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/05/03 10:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 16:53	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	4.1	mg/l	0.050	0.025	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	0.71	mg/l	0.050	0.025	
Phosphate	0.11	mg/l	0.10	0.050	
Sulfate	9.5	mg/l	0.050	0.025	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/13/03 17:56	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/20/03 13:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.047	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0065	mg/l	0.0060	0.0030	
Manganese	0.019	mg/l	0.0050	0.0025	
Calcium	19	mg/l	0.14	0.070	
Magnesium	5.8	mg/l	0.050	0.025	
Sodium	10	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
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Definitions

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Reported on: 27 AUG 2003

EDL # 200113383
Primary # 39B-0804-1445
Description 39B-0804-1445
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/04/03 14:45

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 14:45	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	5.5	mg/l	0.050	0.025	
Phosphate	< 0.10	mg/l	0.10	0.050	
Sulfate	18	mg/l	0.050	0.025	

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 14:56	E24959	PRIMARY	25

Constituent	Result	Units	PQL	MDL	FLG
Chloride	38	mg/l	1.2	0.62	

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/13/03 16:12	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	410	ug/l	40	10	

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Reported on: 27 AUG 2003

EDL # 200113383
Primary # 39B-0804-1445
Description 39B-0804-1445
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/04/03 14:45

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/20/03 12:59	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.075	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.74	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.034	mg/l	0.0050	0.0025	
Calcium	31	mg/l	0.14	0.070	
Magnesium	18	mg/l	0.050	0.025	
Sodium	17	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 27 AUG 2003

EDL # 200113386
Primary # MWI-0805-0845
Description MWI-0805-0845
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/05/03 08:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 16:32	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.6	mg/l	0.050	0.025	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.0	mg/l	0.050	0.025	
Phosphate	< 0.10	mg/l	0.10	0.050	
Sulfate	9.0	mg/l	0.050	0.025	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/13/03 18:10	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	1400	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/20/03 13:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.0061	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.66	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.055	mg/l	0.0050	0.0025	
Calcium	11	mg/l	0.14	0.070	
Magnesium	6.7	mg/l	0.050	0.025	
Sodium	8.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 27 AUG 2003

EDL # 200113385
Primary # 138A-0805-0830
Description 138A-0805-0830
Source Type LIQUID
Sampler GB
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/05/03 12:00
Smpl Date-Time 08/05/03 08:30

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/05/03 15:06	E24959	PRIMARY	1

Comment Chloride MS/MSD recoveries are greater than 120%.

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.4	mg/l	0.050	0.025	C
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.7	mg/l	0.050	0.025	
Phosphate	0.21	mg/l	0.10	0.050	
Sulfate	9.7	mg/l	0.050	0.025	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/13/03 16:38	E70080	PRIMARY	50

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2600	ug/l	200	50	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/20/03 13:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0064	mg/l	0.0060	0.0030	
Manganese	0.0090	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.1	mg/l	0.050	0.025	
Sodium	8.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 28 AUG 2003

EDL # 200114098
Primary # MW-2-0814-0840
Description MW-2-0814-0840
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/14/03 08:40

EPA 8260 TENTATIVELY IDENTIFIED CMPDS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 21:23	E24985	PRIMARY	1

Comment No qualifying unidentified peaks were found in this sample.

Constituent	Result	Units	PQL	MDL	FLG

EPA 8260 VOLATILE ORGANICS BY GC/MS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 21:23	E24985	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Dichlorodifluoromethane	< 10	ug/l	10	5.0	
Chloromethane	< 10	ug/l	10	5.0	
Vinyl Chloride	< 10	ug/l	10	5.0	
Bromomethane	< 10	ug/l	10	5.0	
Chloroethane	< 10	ug/l	10	5.0	
Trichlorofluoromethane	< 5.0	ug/l	5.0	2.5	
Acetone	< 20	ug/l	20	10	
1,1-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Freon 113	< 5.0	ug/l	5.0	2.5	
Dichloromethane	< 5.0	ug/l	5.0	2.5	
Carbon disulfide	< 5.0	ug/l	5.0	2.5	
t-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
1,1-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Vinyl acetate	< 20	ug/l	20	10	
Methyl ethyl ketone	< 20	ug/l	20	10	
c-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Chloroform	< 5.0	ug/l	5.0	2.5	
1,1,1-Trichloroethane	< 5.0	ug/l	5.0	2.5	
1,2-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Carbon tetrachloride	< 5.0	ug/l	5.0	2.5	
Benzene	< 5.0	ug/l	5.0	2.5	
Trichloroethene	< 5.0	ug/l	5.0	2.5	
1,2-Dichloropropane	< 5.0	ug/l	5.0	2.5	
Bromodichloromethane	< 5.0	ug/l	5.0	2.5	
2-Chloroethyl vinyl ether	< 10	ug/l	10	5.0	J
Methyl isobutyl ketone	< 20	ug/l	20	10	
c-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
t-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
Toluene	< 5.0	ug/l	5.0	2.5	
1,1,2-Trichloroethane	< 5.0	ug/l	5.0	2.5	
2-Hexanone	< 20	ug/l	20	10	
Dibromochloromethane	< 5.0	ug/l	5.0	2.5	
Tetrachloroethene	< 5.0	ug/l	5.0	2.5	
Chlorobenzene	< 5.0	ug/l	5.0	2.5	
Ethylbenzene	< 5.0	ug/l	5.0	2.5	
m-Xylene/p-Xylene	< 10	ug/l	10	5.0	
Styrene	< 5.0	ug/l	5.0	2.5	
o-Xylene	< 5.0	ug/l	5.0	2.5	
Bromoform	< 5.0	ug/l	5.0	2.5	
1,1,2,2-Tetrachloroethane	< 5.0	ug/l	5.0	2.5	

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 28 AUG 2003

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL - Method Detection Limit
PQL - Practical Quantitation Limit
ND - Not Detected above the MDL
FLG - Data Flag

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Reported on: 28 AUG 2003

EDL # 200114097
Primary # MW-1-0813-1415
Description MW-1-0813-1415
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/13/03 14:15

EPA 8260 TENTATIVELY IDENTIFIED CMPDS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 20:55	E24985	PRIMARY	1

Comment No qualifying unidentified peaks were found in this sample.

Constituent	Result	Units	PQL	MDL	FLG

EPA 8260 VOLATILE ORGANICS BY GC/MS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 20:55	E24985	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Dichlorodifluoromethane	< 10	ug/l	10	5.0	
Chloromethane	< 10	ug/l	10	5.0	
Vinyl Chloride	< 10	ug/l	10	5.0	
Bromomethane	< 10	ug/l	10	5.0	
Chloroethane	< 10	ug/l	10	5.0	
Trichlorofluoromethane	< 5.0	ug/l	5.0	2.5	
Acetone	< 20	ug/l	20	10	
1,1-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Freon 113	< 5.0	ug/l	5.0	2.5	
Dichloromethane	< 5.0	ug/l	5.0	2.5	
Carbon disulfide	< 5.0	ug/l	5.0	2.5	
t-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
1,1-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Vinyl acetate	< 20	ug/l	20	10	
Methyl ethyl ketone	< 20	ug/l	20	10	
c-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Chloroform	< 5.0	ug/l	5.0	2.5	
1,1,1-Trichloroethane	< 5.0	ug/l	5.0	2.5	
1,2-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Carbon tetrachloride	< 5.0	ug/l	5.0	2.5	
Benzene	< 5.0	ug/l	5.0	2.5	
Trichloroethene	< 5.0	ug/l	5.0	2.5	
1,2-Dichloropropane	< 5.0	ug/l	5.0	2.5	
Bromodichloromethane	< 5.0	ug/l	5.0	2.5	
2-Chloroethyl vinyl ether	< 10	ug/l	10	5.0	J
Methyl isobutyl ketone	< 20	ug/l	20	10	
c-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
t-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
Toluene	< 5.0	ug/l	5.0	2.5	
1,1,2-Trichloroethane	< 5.0	ug/l	5.0	2.5	
2-Hexanone	< 20	ug/l	20	10	
Dibromochloromethane	< 5.0	ug/l	5.0	2.5	
Tetrachloroethene	< 5.0	ug/l	5.0	2.5	
Chlorobenzene	< 5.0	ug/l	5.0	2.5	
Ethylbenzene	< 5.0	ug/l	5.0	2.5	
m-Xylene/p-Xylene	< 10	ug/l	10	5.0	
Styrene	< 5.0	ug/l	5.0	2.5	
o-Xylene	< 5.0	ug/l	5.0	2.5	
Bromoform	< 5.0	ug/l	5.0	2.5	
1,1,2,2-Tetrachloroethane	< 5.0	ug/l	5.0	2.5	

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Environmental Laboratory
Bldg. 02030, P.O. Box 15847
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(916)355-4780

Reported on: 28 AUG 2003

Data Flag Definitions

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Reported on: 05 SEP 2003

EDL # 200114100
Primary # EW-2-0814-0915
Description EW-2-0814-0915
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/14/03 09:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/14/03 17:14	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.4	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	0.31	mg/l	0.30	0.15	
Sulfate	9.4	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/20/03 16:00	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2600	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/27/03 10:23	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0062	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.3	mg/l	0.050	0.025	
Sodium	7.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EDL # 200114100
Primary # EW-2-0814-0915
Description EW-2-0814-0915
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/14/03 09:15

EPA 8260 TENTATIVELY IDENTIFIED CMPDS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 22:19	E24985	PRIMARY	1

Comment No qualifying unidentified peaks were found in this sample.

Constituent	Result	Units	PQL	MDL	FLG

EPA 8260 VOLATILE ORGANICS BY GC/MS 5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 22:19	E24985	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Dichlorodifluoromethane	< 10	ug/l	10	5.0	
Chloromethane	< 10	ug/l	10	5.0	
Vinyl Chloride	< 10	ug/l	10	5.0	
Bromomethane	< 10	ug/l	10	5.0	
Chloroethane	< 10	ug/l	10	5.0	
Trichlorofluoromethane	< 5.0	ug/l	5.0	2.5	
Acetone	< 20	ug/l	20	10	
1,1-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Freon 113	< 5.0	ug/l	5.0	2.5	
Dichloromethane	< 5.0	ug/l	5.0	2.5	
Carbon disulfide	< 5.0	ug/l	5.0	2.5	
t-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
1,1-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Vinyl acetate	< 20	ug/l	20	10	
Methyl ethyl ketone	< 20	ug/l	20	10	
c-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Chloroform	< 5.0	ug/l	5.0	2.5	
1,1,1-Trichloroethane	< 5.0	ug/l	5.0	2.5	
1,2-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Carbon tetrachloride	< 5.0	ug/l	5.0	2.5	
Benzene	< 5.0	ug/l	5.0	2.5	
Trichloroethene	6.7	ug/l	5.0	2.5	
1,2-Dichloropropane	< 5.0	ug/l	5.0	2.5	
Bromodichloromethane	< 5.0	ug/l	5.0	2.5	
2-Chloroethyl vinyl ether	< 10	ug/l	10	5.0	J
Methyl isobutyl ketone	< 20	ug/l	20	10	
c-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
t-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
Toluene	< 5.0	ug/l	5.0	2.5	
1,1,2-Trichloroethane	< 5.0	ug/l	5.0	2.5	
2-Hexanone	< 20	ug/l	20	10	
Dibromochloromethane	< 5.0	ug/l	5.0	2.5	
Tetrachloroethene	< 5.0	ug/l	5.0	2.5	
Chlorobenzene	< 5.0	ug/l	5.0	2.5	
Ethylbenzene	< 5.0	ug/l	5.0	2.5	
m-Xylene/p-Xylene	< 10	ug/l	10	5.0	
Styrene	< 5.0	ug/l	5.0	2.5	
o-Xylene	< 5.0	ug/l	5.0	2.5	
Bromoform	< 5.0	ug/l	5.0	2.5	
1,1,2,2-Tetrachloroethane	< 5.0	ug/l	5.0	2.5	

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 05 SEP 2003

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H- Correlation coefficient for MSA less than 0.995 (EPA +)
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Reported on: 05 SEP 2003

EDL # 200114099
Primary # EW-1-0814-0720
Description EW-1-0814-0720
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/14/03 07:20

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/14/03 16:52	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.2	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/15/03 14:57	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	300	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/27/03 10:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.012	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0088	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	6.7	mg/l	0.050	0.025	
Sodium	9.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EDL # 200114099
Primary # EW-1-0814-0720
Description EW-1-0814-0720
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/14/03 10:22
Smpl Date-Time 08/14/03 07:20

EPA 8260 TENTATIVELY IDENTIFIED CMPDS

5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 21:51	E24985	PRIMARY	1

Comment No qualifying unidentified peaks were found in this sample.

Constituent	Result	Units	PQL	MDL	FLG

EPA 8260 VOLATILE ORGANICS BY GC/MS

5030B 8260B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP-2	08/14/03 21:51	E24985	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Dichlorodifluoromethane	< 10	ug/l	10	5.0	
Chloromethane	< 10	ug/l	10	5.0	
Vinyl Chloride	< 10	ug/l	10	5.0	
Bromomethane	< 10	ug/l	10	5.0	
Chloroethane	< 10	ug/l	10	5.0	
Trichlorofluoromethane	< 5.0	ug/l	5.0	2.5	
Acetone	< 20	ug/l	20	10	
1,1-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Freon 113	< 5.0	ug/l	5.0	2.5	
Dichloromethane	< 5.0	ug/l	5.0	2.5	
Carbon disulfide	< 5.0	ug/l	5.0	2.5	
t-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
1,1-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Vinyl acetate	< 20	ug/l	20	10	
Methyl ethyl ketone	< 20	ug/l	20	10	
c-1,2-Dichloroethene	< 5.0	ug/l	5.0	2.5	
Chloroform	< 5.0	ug/l	5.0	2.5	
1,1,1-Trichloroethane	< 5.0	ug/l	5.0	2.5	
1,2-Dichloroethane	< 5.0	ug/l	5.0	2.5	
Carbon tetrachloride	< 5.0	ug/l	5.0	2.5	
Benzene	< 5.0	ug/l	5.0	2.5	
Trichloroethene	< 5.0	ug/l	5.0	2.5	
1,2-Dichloropropane	< 5.0	ug/l	5.0	2.5	
Bromodichloromethane	< 5.0	ug/l	5.0	2.5	
2-Chloroethyl vinyl ether	< 10	ug/l	10	5.0	J
Methyl isobutyl ketone	< 20	ug/l	20	10	
c-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
t-1,3-Dichloropropene	< 5.0	ug/l	5.0	2.5	
Toluene	< 5.0	ug/l	5.0	2.5	
1,1,2-Trichloroethane	< 5.0	ug/l	5.0	2.5	
2-Hexanone	< 20	ug/l	20	10	
Dibromochloromethane	< 5.0	ug/l	5.0	2.5	
Tetrachloroethene	< 5.0	ug/l	5.0	2.5	
Chlorobenzene	< 5.0	ug/l	5.0	2.5	
Ethylbenzene	< 5.0	ug/l	5.0	2.5	
m-Xylene/p-Xylene	< 10	ug/l	10	5.0	
Styrene	< 5.0	ug/l	5.0	2.5	
o-Xylene	< 5.0	ug/l	5.0	2.5	
Bromoform	< 5.0	ug/l	5.0	2.5	
1,1,2,2-Tetrachloroethane	< 5.0	ug/l	5.0	2.5	

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Reported on: 05 SEP 2003

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FLG- Data Flag

AEROJET
Environmental Laboratory
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Reported on: 29 SEP 2003

EDL # 200115161
Primary # 80A-0828-1321
Description 80A-0828-1321
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/28/03 13:47
Smpl Date-Time 08/28/03 13:21

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 11:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.020	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0070	mg/l	0.0060	0.0030	
Manganese	0.018	mg/l	0.0050	0.0025	
Calcium	11	mg/l	0.14	0.070	
Magnesium	6.7	mg/l	0.050	0.025	
Sodium	7.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200117003
Primary # EW-1-0922-1215
Description EW-1-0922-1215
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 12:15

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/23/03 14:10	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.6	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.6	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/22/03 15:52	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	280	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
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(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116220
Primary # EW-1-0911-1105
Description EW-1-0911-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:05

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/11/03 17:19	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.6	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.6	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/12/03 13:26	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	250	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/12/03 22:04	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116220
Primary # EW-1-0911-1105
Description EW-1-0911-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:05

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 14:31	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.017	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0099	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.1	mg/l	0.050	0.025	
Sodium	9.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 22:01	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 11:47	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116220
Primary # EW-1-0911-1105
Description EW-1-0911-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:05

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 13:04	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	0.0030	mg/l	0.0020	0.00060	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200115774
Primary # EW-1-0908-1450
Description EW-1-0908-1450
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:50

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 12:45	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.5	mg/l	0.20	0.10	C
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/10/03 16:58	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	410	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/11/03 20:36	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EDL # 200115774
Primary # EW-1-0908-1450
Description EW-1-0908-1450
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:50

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 10:24	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.016	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	0.22	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0097	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	6.9	mg/l	0.050	0.025	
Sodium	8.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 12:32	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 10:51	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

AEROJET
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200115774
Primary # EW-1-0908-1450
Description EW-1-0908-1450
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:50

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:07	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	0.0023	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:08	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200117002
Primary # EW-2-0922-1155
Description EW-2-0922-1155
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 11:55

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/23/03 13:59	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.3	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/22/03 15:39	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2800	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116218
Primary # EW-2-0911-1010
Description EW-2-0911-1010
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:10

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/11/03 16:58	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	0.31	mg/l	0.30	0.15	
Sulfate	9.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/12/03 12:58	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2700	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/12/03 20:55	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	5.1	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116218
Primary # EW-2-0911-1010
Description EW-2-0911-1010
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:10

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/17/03 10:48	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0070	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.3	mg/l	0.050	0.025	
Sodium	8.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 20:46	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 11:19	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116218
Primary # EW-2-0911-1010
Description EW-2-0911-1010
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:10

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:34	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200115775
Primary # EW-2-0908-1415
Description EW-2-0908-1415
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 12:56	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.2	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/10/03 17:12	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	3000	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/11/03 21:10	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL # 200115775
Primary # EW-2-0908-1415
Description EW-2-0908-1415
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:15

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 10:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0073	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.4	mg/l	0.050	0.025	
Sodium	7.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 13:10	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 10:58	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 30 SEP 2003

EDL # 200115775
Primary # EW-2-0908-1415
Description EW-2-0908-1415
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 14:15

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:14	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:25	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:14	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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(916)355-4780

Reported on: 30 SEP 2003

EDL # 200116217
Primary # RW-1-0911-0925
Description RW-1-0911-0925
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 09:25

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/11/03 16:47	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.7	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/12/03 12:44	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2300	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/12/03 20:19	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EDL # 200116217
Primary # RW-1-0911-0925
Description RW-1-0911-0925
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 09:25

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/17/03 10:53	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.021	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0075	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.2	mg/l	0.050	0.025	
Sodium	8.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 20:08	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 11:12	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 30 SEP 2003

EDL # 200116217
Primary # RW-1-0911-0925
Description RW-1-0911-0925
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 09:25

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:28	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	0.0031	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:28	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200115776
Primary # RW-1-0908-1332
Description RW-1-0908-1332
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 13:32

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 13:07	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/10/03 17:26	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2500	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/11/03 21:45	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 30 SEP 2003

EDL # 200115776
Primary # RW-1-0908-1332
Description RW-1-0908-1332
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 13:32

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 10:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0072	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.4	mg/l	0.050	0.025	
Sodium	8.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 13:48	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 11:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 30 SEP 2003

EDL # 200115776
Primary # RW-1-0908-1332
Description RW-1-0908-1332
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 13:32

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:21	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:21	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200117001
Primary # MW-1-0922-1112
Description MW-1-0922-1112
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 11:12

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/23/03 13:48	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.5	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.36	mg/l	0.050	0.025	
Nitrate	< 0.050	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/22/03 15:25	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	880	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200116221
Primary # MW-1-0911-1118
Description MW-1-0911-1118
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:18

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/12/03 16:32	E24959	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Bromide	24	mg/l	0.25	0.12	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/11/03 17:30	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.2	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/12/03 13:40	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EDL # 200116221
Primary # MW-1-0911-1118
Description MW-1-0911-1118
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:18

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/12/03 22:39	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.6	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 14:04	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.018	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.0055	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.8	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Environmental Laboratory
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Sacramento, CA 95852-1847
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Reported on: 30 SEP 2003

EDL # 200116221
Primary # MW-1-0911-1118
Description MW-1-0911-1118
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 11:18

EPA 602 AROMATIC VOLATILE ORGANICS 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 22:39	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA 7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA 7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 13:33	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR 7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA 7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:26	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200115772
Primary # MW-1-0908-1112
Description MW-1-0908-1112
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 11:12

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 12:35	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.1	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.4	mg/l	0.10	0.050	

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 14:10	E66526	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Bromide	22	mg/l	0.25	0.12	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/10/03 16:44	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2300	ug/l	40	10	

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Environmental Laboratory
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Reported on: 30 SEP 2003

EDL # 200115772
Primary # MW-1-0908-1112
Description MW-1-0908-1112
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 11:12

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/11/03 20:01	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.3	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 10:19	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.017	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.010	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.6	mg/l	0.050	0.025	
Sodium	8.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 30 SEP 2003

EDL # 200115772
Primary # MW-1-0908-1112
Description MW-1-0908-1112
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 11:12

EPA 602 AROMATIC VOLATILE ORGANICS 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 11:55	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA 7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 10:44	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA 7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR 7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA 7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:01	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 30 SEP 2003

EDL # 200117000
Primary # 138-0922-1016
Description 138-0922-1016
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 10:16

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/23/03 13:38	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	17	mg/l	0.050	0.025	
Nitrate	1.0	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/22/03 15:11	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2400	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200116219
Primary # 138-0911-1020
Description 138-0911-1020
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:20

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/11/03 17:08	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.7	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	8.8	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/12/03 13:12	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2100	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/12/03 21:29	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	1.2	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL # 200116219
Primary # 138-0911-1020
Description 138-0911-1020
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:20

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/17/03 11:09	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.021	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0074	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.5	mg/l	0.050	0.025	
Sodium	7.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 21:24	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 11:26	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 30 SEP 2003

EDL # 200116219
Primary # 138-0911-1020
Description 138-0911-1020
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/11/03 12:42
Smpl Date-Time 09/11/03 10:20

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 12:43	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:45	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 10:41	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 30 SEP 2003

EDL # 200115770
Primary # 138-0908-1017
Description 138-0908-1017
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 10:17

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/09/03 12:24	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.6	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	5.3	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/10/03 16:30	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS

601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/11/03 19:26	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	0.74	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 30 SEP 2003

EDL # 200115770
Primary # 138-0908-1017
Description 138-0908-1017
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 10:17

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/16/03 10:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.020	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0062	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.1	mg/l	0.050	0.025	
Sodium	7.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	09/15/03 11:17	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 10:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 30 SEP 2003

EDL # 200115770
Primary # 138-0908-1017
Description 138-0908-1017
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/08/03 16:10
Smpl Date-Time 09/08/03 10:17

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 11:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 10:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 09:54	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 02 OCT 2003

EDL # 200116584
Primary # 138-0916-1042
Description 138-0916-1042
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 10:42

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 15:28	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.3	mg/l	0.10	0.050	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 16:30	E66526	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Bromide	16	mg/l	0.25	0.12	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/16/03 15:40	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EDL # 200116584
Primary # 138-0916-1042
Description 138-0916-1042
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 10:42

EPA 601 HALOGENATED VOLATILE ORGANICS

601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 15:09	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	2.1	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:07	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0066	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	8.1	mg/l	0.050	0.025	
Sodium	8.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 02 OCT 2003

EDL # 200116584
Primary # 138-0916-1042
Description 138-0916-1042
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 10:42

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 15:09	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 13:47	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:39	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 02 OCT 2003

EDL # 200116587
Primary # MW-1-0916-1152
Description MW-1-0916-1152
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:52

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 16:00	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	4.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	0.22	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.8	mg/l	0.10	0.050	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 16:41	E66526	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Bromide	11	mg/l	0.25	0.12	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/16/03 16:22	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2100	ug/l	40	10	

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EDL # 200116587
Primary # MW-1-0916-1152
Description MW-1-0916-1152
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:52

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 14:31	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.9	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS 3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:23	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.018	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.099	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.9	mg/l	0.050	0.025	
Sodium	9.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 02 OCT 2003

EDL # 200116587
Primary # MW-1-0916-1152
Description MW-1-0916-1152
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:52

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 14:31	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:57	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 14:08	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:58	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 02 OCT 2003

EDL # 200116583
Primary # RW-1-0916-0935
Description RW-1-0916-0935
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 09:35

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 15:18	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.5	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/16/03 15:26	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 12:36	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	5.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 02 OCT 2003

EDL # 200116583
Primary # RW-1-0916-0935
Description RW-1-0916-0935
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 09:35

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:02	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0073	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.5	mg/l	0.050	0.025	
Sodium	8.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 12:36	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 02 OCT 2003

EDL # 200116583
Primary # RW-1-0916-0935
Description RW-1-0916-0935
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 09:35

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 13:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:32	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 02 OCT 2003

EDL # 200116585
Primary # EW-2-0916-1115
Description EW-2-0916-1115
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 15:39	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	0.31	mg/l	0.30	0.15	
Sulfate	9.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/16/03 15:54	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2700	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 13:14	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 02 OCT 2003

EDL # 200116585
Primary # EW-2-0916-1115
Description EW-2-0916-1115
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:15

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0061	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.7	mg/l	0.050	0.025	
Sodium	8.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 13:14	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:43	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 02 OCT 2003

EDL # 200116585
Primary # EW-2-0916-1115
Description EW-2-0916-1115
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:15

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 13:54	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:45	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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(916)355-4780

Reported on: 02 OCT 2003

EDL # 200116586
Primary # EW-1-0916-1150
Description EW-1-0916-1150
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:50

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/16/03 15:50	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.5	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.6	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/16/03 16:08	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	270	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 13:53	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 02 OCT 2003

EDL # 200116586
Primary # EW-1-0916-1150
Description EW-1-0916-1150
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:50

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.016	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0096	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	11	mg/l	0.14	0.070	
Magnesium	7.0	mg/l	0.050	0.025	
Sodium	8.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/17/03 13:53	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/24/03 12:50	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 02 OCT 2003

EDL # 200116586
Primary # EW-1-0916-1150
Description EW-1-0916-1150
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/16/03 13:05
Smpl Date-Time 09/16/03 11:50

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/25/03 14:01	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	0.0021	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	09/22/03 11:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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(916)355-4780

Reported on: 08 OCT 2003

EDL # 200116999
Primary # RW-1-0922-0925
Description RW-1-0922-0925
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 09:25

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/23/03 13:27	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.2	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	09/22/03 14:57	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2400	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/30/03 11:56	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.021	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0080	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.4	mg/l	0.050	0.025	
Sodium	8.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
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(916)355-4780

Reported on: 08 OCT 2003

EDL # 200116999
Primary # RW-1-0922-0925
Description RW-1-0922-0925
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/22/03 12:46
Smpl Date-Time 09/22/03 09:25

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 13:24	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 09:23	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	09/23/03 11:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 09:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117625
Primary # RW-1-0929-0920
Description RW-1-0929-0920
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 09:20

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 12:42	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 12:39	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 19:29	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.5	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL # 200117625
Primary # RW-1-0929-0920
Description RW-1-0929-0920
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 09:20

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 10:06	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0088	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.2	mg/l	0.050	0.025	
Sodium	8.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 12:57	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 13:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 21 OCT 2003

EDL # 200117625
Primary # RW-1-0929-0920
Description RW-1-0929-0920
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 09:20

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 09:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 09:56	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 21 OCT 2003

EDL # 200117632
Primary # EW-2-0929-1310
Description EW-2-0929-1310
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 13:10

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 12:03	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 13:48	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2600	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 22:23	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.3	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL # 200117632
Primary # EW-2-0929-1310
Description EW-2-0929-1310
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 13:10

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 11:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.025	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0086	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	7.4	mg/l	0.050	0.025	
Sodium	8.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 09:47	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 14:42	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117632
Primary # EW-2-0929-1310
Description EW-2-0929-1310
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 13:10

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 10:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 10:42	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117630
Primary # 80A-0929-1216
Description 80A-0929-1216
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:16

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 12:13	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.4	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	0.56	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.3	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 13:20	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	890	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 21:13	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	1.5	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117630
Primary # 80A-0929-1216
Description 80A-0929-1216
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:16

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 10:49	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.019	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0081	mg/l	0.0060	0.0030	
Manganese	0.011	mg/l	0.0050	0.0025	
Calcium	11	mg/l	0.14	0.070	
Magnesium	6.7	mg/l	0.050	0.025	
Sodium	7.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 11:03	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 14:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 21 OCT 2003

EDL # 200117630
Primary # 80A-0929-1216
Description 80A-0929-1216
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:16

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 10:07	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 10:16	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 21 OCT 2003

EDL # 200117631
Primary # EW-1-0929-1245
Description EW-1-0929-1245
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:45

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 13:11	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.6	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.7	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.4	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 13:34	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	270	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 21:48	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117631
Primary # EW-1-0929-1245
Description EW-1-0929-1245
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:45

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 10:54	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.018	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	0.11	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.011	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.1	mg/l	0.050	0.025	
Sodium	9.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 10:25	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 14:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 21 OCT 2003

EDL # 200117631
Primary # EW-1-0929-1245
Description EW-1-0929-1245
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 12:45

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 10:14	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 10:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 21 OCT 2003

EDL # 200117629
Primary # MW-1-0929-1105
Description MW-1-0929-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 11:05

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 12:32	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.084	mg/l	0.050	0.025	
Nitrate	< 0.050	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 15:29	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	9.8	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 20:38	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.2	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 21 OCT 2003

EDL # 200117629
Primary # MW-1-0929-1105
Description MW-1-0929-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 11:05

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS

3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 10:44	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.68	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.14	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	9.0	mg/l	0.050	0.025	
Sodium	9.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS

602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 11:41	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 14:06	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 21 OCT 2003

EDL # 200117629
Primary # MW-1-0929-1105
Description MW-1-0929-1105
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 11:05

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 09:59	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 10:09	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117627
Primary # 138-0929-1008
Description 138-0929-1008
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 10:08

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/30/03 12:22	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.1	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Nitrate	0.58	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.0	mg/l	0.10	0.050	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/02/03 08:26	E24959	PRIMARY	2

Constituent	Result	Units	PQL	MDL	FLG
Bromide	12	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/01/03 12:53	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	1900	ug/l	40	10	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 21 OCT 2003

EDL # 200117627
Primary # 138-0929-1008
Description 138-0929-1008
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 10:08

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/29/03 20:03	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.2	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS 3010A 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/03/03 10:17	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0080	mg/l	0.0060	0.0030	
Manganese	0.019	mg/l	0.0050	0.0025	
Calcium	17	mg/l	0.14	0.070	
Magnesium	8.6	mg/l	0.050	0.025	
Sodium	8.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 21 OCT 2003

EDL # 200117627
Primary # 138-0929-1008
Description 138-0929-1008
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/29/03 14:32
Smpl Date-Time 09/29/03 10:08

EPA 602 AROMATIC VOLATILE ORGANICS 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	09/30/03 12:19	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA 7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/02/03 14:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA 7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/06/03 11:49	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR 7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/07/03 11:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA 7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	10/03/03 10:03	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 22 OCT 2003

EDL # 200118299
Primary # WNN-EW-1
Description WNN-EW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 10:45

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/07/03 13:34	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.5	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.7	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.5	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/08/03 14:26	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	280	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 22 OCT 2003

EDL # 200118300
Primary # WNN-EW-2
Description WNN-EW-2
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 11:05

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/07/03 13:44	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.097	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.3	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/08/03 14:40	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2600	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND- Not Detected above the MDL
FLG- Data Flag

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Reported on: 22 OCT 2003

EDL # 200118298
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 10:18

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/07/03 12:46	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.066	mg/l	0.050	0.025	
Nitrate	0.12	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/08/03 13:45	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 22 OCT 2003

EDL # 200118295
Primary # STSW-138A
Description STSW-138A
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 08:55

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/07/03 13:05	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	< 0.030	mg/l	0.030	0.015	
Chloride	3.4	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	3.0	mg/l	0.050	0.025	
Nitrate	0.076	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/08/03 13:31	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	940	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 05 NOV 2003

EDL # 200119795
Primary # WNN-EW-2
Description WNN-EW-2
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 12:20

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/21/03 16:31	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.096	mg/l	0.030	0.015	
Chloride	2.9	mg/l	0.20	0.10	
Bromide	0.34	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.3	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/22/03 13:49	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2500	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 05 NOV 2003

EDL # 200119794
Primary # WNN-EW-1
Description WNN-EW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 11:45

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/21/03 16:20	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	2.4	mg/l	0.20	0.10	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.6	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.4	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/22/03 13:35	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	300	ug/l	4.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119352
Primary # WNN-EW-1
Description WNN-EW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:00

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/15/03 18:14	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.14	mg/l	0.030	0.015	
Chloride	2.4	mg/l	0.20	0.10	
Bromide	< 0.050	mg/l	0.050	0.025	
Nitrate	1.6	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/15/03 16:50	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	270	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 8500	10/16/03 11:35	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119352
Primary # WNN-EW-1
Description WNN-EW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:00

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 13:32	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.018	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0093	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	6.9	mg/l	0.050	0.025	
Sodium	9.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 12:34	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 11:21	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119352
Primary # WNN-EW-1
Description WNN-EW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:00

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 11:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119353
Primary # WNN-EW-2
Description WNN-EW-2
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:25

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/15/03 18:35	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.10	mg/l	0.030	0.015	
Chloride	2.9	mg/l	0.20	0.10	
Bromide	0.25	mg/l	0.050	0.025	
Nitrate	1.2	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/15/03 17:04	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2500	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 8500	10/16/03 12:09	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.6	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 11 NOV 2003

EDL # 200119353
Primary # WNN-EW-2
Description WNN-EW-2
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:25

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 13:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0079	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.5	mg/l	0.050	0.025	
Sodium	8.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 13:13	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 11:28	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 11 NOV 2003

EDL # 200119353
Primary # WNN-EW-2
Description WNN-EW-2
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 12:25

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:44	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 11:24	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119791
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 09:35

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/21/03 16:09	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.10	mg/l	0.030	0.015	
Chloride	2.8	mg/l	0.20	0.10	
Bromide	0.28	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/22/03 12:54	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2100	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 15:09	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0086	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.6	mg/l	0.050	0.025	
Sodium	8.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 11 NOV 2003

EDL # 200119791
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 09:35

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 11:49	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 11:31	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119349
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 09:40

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/15/03 18:24	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.11	mg/l	0.030	0.015	
Chloride	2.9	mg/l	0.20	0.10	
Bromide	0.21	mg/l	0.050	0.025	
Nitrate	1.3	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/15/03 16:10	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2100	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 8500	10/16/03 09:50	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.0	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 11 NOV 2003

EDL # 200119349
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 09:40

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 12:49	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0076	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.4	mg/l	0.050	0.025	
Sodium	8.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 10:40	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 10:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119349
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 09:40

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:01	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:25	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 10:45	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 11 NOV 2003

EDL # 200118294
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 09:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/07/03 12:55	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.9	mg/l	0.20	0.10	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.083	mg/l	0.050	0.025	
Nitrate	1.4	mg/l	0.050	0.025	
Phosphate	0.32	mg/l	0.30	0.15	
Sulfate	9.2	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/08/03 13:18	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/14/03 11:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0084	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	12	mg/l	0.14	0.070	
Magnesium	7.2	mg/l	0.050	0.025	
Sodium	8.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 11 NOV 2003

EDL # 200118294
Primary # WNN-RW-1
Description WNN-RW-1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/07/03 12:05
Smpl Date-Time 10/07/03 09:45

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 10:04	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 10:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 11:50	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 10:06	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119793
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 11:20

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/21/03 16:41	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.9	mg/l	0.20	0.10	
Bromide	0.24	mg/l	0.050	0.025	
Nitrate	< 0.050	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	9.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/22/03 13:22	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS

601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/22/03 19:15	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.0	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Reported on: 11 NOV 2003

EDL # 200119793
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 11:20

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 15:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	0.0064	mg/l	0.0060	0.0030	
Iron	0.67	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.089	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.0	mg/l	0.050	0.025	
Sodium	9.5	mg/l	0.80	0.40	
Potassium	2.2	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 18:20	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 12:04	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119793
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/21/03 12:42
Smpl Date-Time 10/21/03 11:20

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 12:06	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:45	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 11:44	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 11 NOV 2003

EDL # 200119351
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 11:36

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/15/03 18:03	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.9	mg/l	0.20	0.10	
Bromide	0.11	mg/l	0.050	0.025	
Nitrate	< 0.050	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.7	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/15/03 16:37	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 8500	10/16/03 11:00	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.2	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119351
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 11:36

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 13:16	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.022	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.64	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.096	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.9	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 11:56	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 11:14	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119351
Primary # WNN-MW1
Description WNN-MW1
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 11:36

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 11:11	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 11 NOV 2003

EDL # 200119350
Primary # STSW-138A
Description STSW-138A
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 10:24

EPA 300.0 ANIONS IN WATER BY IC 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	10/15/03 18:46	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.11	mg/l	0.030	0.015	
Chloride	3.7	mg/l	0.20	0.10	
Bromide	0.66	mg/l	0.050	0.025	
Nitrate	< 0.050	mg/l	0.050	0.025	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/15/03 16:23	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	170	ug/l	40	10	

EPA 601 HALOGENATED VOLATILE ORGANICS 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 8500	10/16/03 10:25	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.3	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL # 200119350
Primary # STSW-138A
Description STSW-138A
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 10:24

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	10/30/03 13:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.026	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0066	mg/l	0.0060	0.0030	
Manganese	0.024	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	8.5	mg/l	0.050	0.025	
Sodium	8.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 602 AROMATIC VOLATILE ORGANICS — 602

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	10/21/03 11:18	E24048	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Benzene	< 0.50	ug/l	0.50	0.25	
Toluene	< 0.50	ug/l	0.50	0.25	
Ethylbenzene	< 0.50	ug/l	0.50	0.25	
1,4-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,3-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
1,2-Dichlorobenzene	< 0.50	ug/l	0.50	0.25	
p-Xylene/m-Xylene	< 0.50	ug/l	0.50	0.25	
o-Xylene	< 0.50	ug/l	0.50	0.25	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/03/03 10:53	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

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Reported on: 11 NOV 2003

EDL # 200119350
Primary # STSW-138A
Description STSW-138A
Source Type LIQUID
Sampler SF
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 10/15/03 13:07
Smpl Date-Time 10/15/03 10:24

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/04/03 11:09	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	10/23/03 12:30	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	11/05/03 10:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 AUG 2004

EDL # 200138922
Primary # MW1-0701-1153
Description MW1-0701-1153
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 11:53

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	07/01/04 15:00	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.20	mg/l	0.030	0.015	
Chloride	3.5	mg/l	0.10	0.050	
Bromide	0.29	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	3.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	07/07/04 14:07	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	07/09/04 12:23	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.025	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.47	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.39	mg/l	0.0050	0.0025	
Calcium	16	mg/l	0.14	0.070	
Magnesium	10	mg/l	0.050	0.025	
Sodium	8.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 16 AUG 2004

EDL # 200138922
Primary # MW1-0701-1153
Description MW1-0701-1153
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 11:53

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/03/04 09:27	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/04/04 09:56	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	07/07/04 11:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/05/04 10:48	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 14 OCT 2004

EDL #	200145630	**Submitter**	0330
Primary #	WNN MW-1	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	WNN MW-1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	09/20/04 14:35
AGC Site #	WNN MW-1	**Sampler**	DH
Report Distribution	R. FRICKE, FILE	**Smpl Date-Time**	09/20/04 12:49

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/22/04 09:49	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.16	mg/l	0.030	0.015	
Chloride	3.7	mg/l	0.10	0.050	
Bromide	0.31	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	16	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/13/04 16:12	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/23/04 12:08	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.029	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.38	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.44	mg/l	0.0050	0.0025	
Calcium	19	mg/l	0.14	0.070	
Magnesium	12	mg/l	0.050	0.025	
Sodium	9.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 21 DEC 2004

EDL # 200151285
Primary # WNN-MN-1
Backup #
Description WNN-MN-1
Source Type WATER
AGC Site # WNN-MN-1
Report Distribution R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 11/29/04 16:30
Sampler DF
Smpl Date-Time 11/29/04 15:34

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	11/30/04 13:26	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.14	mg/l	0.030	0.015	
Chloride	3.4	mg/l	0.10	0.050	
Bromide	0.26	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	19	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	12/02/04 17:17	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	12/06/04 13:53	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.034	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.34	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.50	mg/l	0.0050	0.0025	
Calcium	20	mg/l	0.14	0.070	
Magnesium	12	mg/l	0.050	0.025	
Sodium	9.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

AEROJET

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Reported on: 21 DEC 2004

Data Flag Definitions

A- Suspected aldol condensation product
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E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
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S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 10 MAR 2005

EDL #	200157019	**Submitter**	0330
Primary #	WNN-MW-1	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	WNN-MW-1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/07/05 14:00
AGC Site #	WNN-MW-1	**Sampler**	RLH
Report Distribution	EOPS, FRICKE, FILE	**Smpl Date-Time**	02/07/05 11:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/07/05 17:10	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.15	mg/l	0.030	0.015	
Chloride	3.6	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.28	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	20	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	02/25/05 16:23	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 METALS BY ICP, LIQUID — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	02/15/05 11:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.035	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.32	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.50	mg/l	0.0050	0.0025	
Calcium	20	mg/l	0.14	0.070	
Magnesium	13	mg/l	0.050	0.025	
Sodium	9.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Sacramento, CA 95852-1847
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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 13 APR 2005

EDL #	200158559	**Submitter**	0330
Primary #	WNN-MW-1	**Charge Number**	SAELNE2X11
Backup #	WNN-MW-1	**Chain of Custody**	YES
Description	WNN-MW-1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/22/05 13:18
AGC Site #	WNN-MW-1	**Sampler**	ML
Report Distribution	R. FRICKE, EOPS, FILE	**Smpl Date-Time**	02/22/05 12:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/22/05 13:50	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.14	mg/l	0.030	0.015	
Chloride	3.6	mg/l	0.10	0.050	
Bromide	0.30	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	19	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	03/11/05 15:20	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	02/23/05 15:22	E70533	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	1.1	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.2	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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EDL #	200158559	**Submitter**	0330
Primary #	WNN-MW-1	**Charge Number**	SAELNE2X11
Backup #	WNN-MW-1	**Chain of Custody**	YES
Description	WNN-MW-1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/22/05 13:18
AGC Site #	WNN-MW-1	**Sampler**	ML
Report Distribution	R. FRICKE, EOPS, FILE	**Smpl Date-Time**	02/22/05 12:15

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	03/14/05 11:24	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.034	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.49	mg/l	0.0050	0.0025	
Calcium	20	mg/l	0.14	0.070	
Magnesium	12	mg/l	0.050	0.025	
Sodium	9.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/07/05 11:53	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/08/05 14:06	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/24/05 12:45	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

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Reported on: 13 APR 2005

EDL #	200158559	**Submitter**	0330
Primary #	WNN-MW-1	**Charge Number**	SAELNE2X11
Backup #	WNN-MW-1	**Chain of Custody**	YES
Description	WNN-MW-1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/22/05 13:18
AGC Site #	WNN-MW-1	**Sampler**	ML
Report Distribution	R. FRICKE, EOPS, FILE	**Smpl Date-Time**	02/22/05 12:15

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/04/05 13:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 31 MAY 2005

EDL # 200163079
Primary # WNN-MW-1
Backup # WNN-MW-1
Description WNN-MW-1
Source Type WATER
AGC Site # WNN-MW-1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/13/05 14:00
Sampler BH
Smpl Date-Time 04/13/05 09:55

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	04/14/05 14:36	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.14	mg/l	0.030	0.015	
Chloride	3.5	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.32	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	20	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	05/02/05 20:37	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 METALS BY ICP, LIQUID — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	04/25/05 11:21	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.033	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.50	mg/l	0.0050	0.0025	
Calcium	20	mg/l	0.14	0.070	
Magnesium	12	mg/l	0.050	0.025	
Sodium	9.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 31 MAY 2005

EDL # 200163079
Primary # WNN-MW-1
Backup # WNN-MW-1
Description WNN-MW-1
Source Type WATER
AGC Site # WNN-MW-1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/13/05 14:00
Sampler BH
Smpl Date-Time 04/13/05 09:55

EPA 8021 HALOGENATED VOLATILE ORGANICS 8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	04/19/05 12:59	E25639	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	0.84	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.3	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 06 SEP 2005

EDL # 200172552
Primary # WNN MW-1
Backup #
Description WNN MW-1
Source Type WATER
AGC Site # WNN MW-1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/15/05 14:35
Sampler DH
Smpl Date-Time 08/15/05 11:39

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/15/05 22:51	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.5	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Sulfate	20	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/25/05 13:35	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/22/05 13:32	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.032	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.51	mg/l	0.0050	0.0025	
Calcium	19	mg/l	0.14	0.070	
Magnesium	12	mg/l	0.050	0.025	
Sodium	9.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 FEB 2006

EDL # 200182731
Primary # WNN-MW1
Backup #
Description WNN-MW1
Source Type WATER
AGC Site # WNN-MW1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/14/05 13:00
Sampler KB
Smpl Date-Time 12/14/05 11:08

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/05 16:56	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.14	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.24	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	0.40	mg/l	0.30	0.15	
Sulfate	16	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	01/05/06 20:42	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/17/06 12:29	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.030	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.37	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.48	mg/l	0.0050	0.0025	
Calcium	17	mg/l	0.14	0.070	
Magnesium	11	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Data Flag Definitions

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M- Duplicate precision not met
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S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
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ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 07 APR 2006

EDL #	200187481	**Submitter**	0330
Primary #	WNN-MW1	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	WNN-MW1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/13/06 13:10
AGC Site #	WNN-MW1	**Sampler**	BH
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	02/13/06 11:30

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/14/06 17:13	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.2	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.18	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	0.52	mg/l	0.30	0.15	
Sulfate	16	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	02/27/06 16:31	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	02/22/06 11:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.029	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.34	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.45	mg/l	0.0050	0.0025	
Calcium	17	mg/l	0.14	0.070	
Magnesium	10	mg/l	0.050	0.025	
Sodium	9.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 07 APR 2006

EDL #	200187481	**Submitter**	0330
Primary #	WNN-MW1	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	WNN-MW1	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/13/06 13:10
AGC Site #	WNN-MW1	**Sampler**	BH
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	02/13/06 11:30

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/13/06 11:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/22/06 10:43	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/17/06 11:20	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/21/06 11:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

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G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
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S- Concentration determined by method of standard additions

Definitions

MDL - Method Detection Limit
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ND - Not Detected above the MDL
FLG - Data Flag

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Reported on: 22 MAY 2006

EDL # 200193255
Primary # WNN-MW-1
Backup #
Description WNN-MW-1
Source Type WATER
AGC Site # WNN-MW-1
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 05/01/06 14:25
Sampler BH
Smpl Date-Time 05/01/06 13:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	05/03/06 12:52	E25619	PRIMARY	1

Comment Nitrate, Nitrite and Phosphate exceeded hold times.

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	3.2	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	J
Nitrate	< 0.10	mg/l	0.10	0.050	J
Phosphate	< 0.30	mg/l	0.30	0.15	J

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	05/03/06 16:53	E25619	PRIMARY	2

Constituent	Result	Units	PQL	MDL	FLG
Sulfate	16	mg/l	0.20	0.10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	05/11/06 13:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.35	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.43	mg/l	0.0050	0.0025	
Calcium	16	mg/l	0.14	0.070	
Magnesium	9.8	mg/l	0.050	0.025	
Sodium	8.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Definitions

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Reported on: 03 OCT 2006

EDL # 200202096
Primary # WNN-MW-1
Backup #
Description WNN-MW-1
Source Type WATER
AGC Site # WNN-MW-1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/25/06 13:25
Sampler BB/FIP
Smpl Date-Time 08/25/06 10:50

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/25/06 14:39	E24959	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Sulfate	13	mg/l	0.50	0.25	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/25/06 16:25	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Bromide	< 0.10	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/15/06 11:09	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.32	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.45	mg/l	0.0050	0.0025	
Calcium	16	mg/l	0.14	0.070	
Magnesium	9.7	mg/l	0.050	0.025	
Sodium	8.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 19 SEP 2006

EDL # 200202292
Primary # WNN-MW-1
Backup # WNN-MW-1
Description WNN-MW-1
Source Type WATER
AGC Site # WNN-MW-1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/29/06 10:30
Sampler DH
Smpl Date-Time 08/25/06 10:50

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	09/07/06 00:33	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	4.2	ug/l	4.0	1.0	

EPA 8021 HALOGENATED VOLATILE ORGANICS — 8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	08/30/06 14:23	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.7	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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FLG- Data Flag

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Reported on: 08 FEB 2007

EDL # 200210788
Primary # WNN-MW1
Backup #
Description WNN-MW1
Source Type WATER
AGC Site # WNN-MW1
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/14/06 14:35
Sampler KB
Smpl Date-Time 12/14/06 10:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/06 17:15	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	< 0.10	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/06 17:46	E25619	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	2.0	1.0	
Sulfate	11	mg/l	2.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/17/07 12:08	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.027	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.51	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.43	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.3	mg/l	0.050	0.025	
Sodium	8.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 16 AUG 2004

EDL # 200138923
Primary # 138A-0701-1240
Description 138A-0701-1240
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 12:40

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	07/01/04 15:18	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.10	mg/l	0.030	0.015	
Chloride	3.5	mg/l	0.10	0.050	
Bromide	0.32	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	0.32	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	07/07/04 14:50	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	07/09/04 12:29	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.73	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.040	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.3	mg/l	0.050	0.025	
Sodium	9.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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(916)355-4780

Reported on: 16 AUG 2004

EDL # 200138923
Primary # 138A-0701-1240
Description 138A-0701-1240
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 12:40

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/03/04 09:57	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/04/04 10:27	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	07/07/04 11:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/05/04 11:17	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 14 OCT 2004

EDL # 200145631
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/20/04 14:35
Sampler DH
Smpl Date-Time 09/20/04 13:30

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/22/04 10:06	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.11	mg/l	0.030	0.015	
Chloride	3.9	mg/l	0.10	0.050	
Bromide	0.34	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	0.83	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/13/04 16:32	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/23/04 12:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.026	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.72	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.034	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.0	mg/l	0.050	0.025	
Sodium	8.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 14 OCT 2004

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 21 DEC 2004

EDL # 200151284
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 11/29/04 16:30
Sampler DF
Smpl Date-Time 11/29/04 14:33

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	11/30/04 13:07	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.11	mg/l	0.030	0.015	
Chloride	3.5	mg/l	0.10	0.050	
Bromide	0.35	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	1.4	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	12/02/04 17:03	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	11	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	12/06/04 13:35	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.66	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.027	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.0	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 10 MAR 2005

EDL # 200157020
Primary # WNN-138A
Backup #
Description WNN-138A
Source Type WATER
AGC Site # WNN-138A
Report Distribution EOPS, FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/07/05 14:00
Sampler RLH
Smpl Date-Time 02/07/05 13:05

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/07/05 17:28	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	3.7	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.80	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	0.35	mg/l	0.30	0.15	
Sulfate	4.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	02/25/05 16:38	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	200	ug/l	4.0	1.0	

EPA 6010 METALS BY ICP, LIQUID — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	02/15/05 11:52	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.027	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.66	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.024	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.6	mg/l	0.050	0.025	
Sodium	8.9	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 06 SEP 2005

EDL # 200172553
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/15/05 14:35
Sampler DH
Smpl Date-Time 08/15/05 12:37

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/15/05 23:09	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.0	mg/l	0.10	0.050	
Nitrate	1.4	mg/l	0.10	0.050	
Sulfate	7.9	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/25/05 15:55	E70080	PRIMARY	25

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	1500	ug/l	100	25	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/22/05 13:37	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.024	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.012	mg/l	0.0060	0.0030	
Manganese	0.010	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	7.8	mg/l	0.050	0.025	
Sodium	8.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 13 APR 2005

EDL # 200158552
Primary # STSW 138A
Backup # STSW-138A
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/22/05 13:18
Sampler ML
Smpl Date-Time 02/22/05 10:50

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/22/05 14:08	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	3.6	mg/l	0.10	0.050	
Bromide	0.90	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Phosphate	0.30	mg/l	0.30	0.15	
Sulfate	4.5	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	03/11/05 15:05	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	280	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
HP 6890 GC	02/23/05 13:36	E70533	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

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(916)355-4780

EDL # 200158552
Primary # STSW 138A
Backup # STSW-138A
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/22/05 13:18
Sampler ML
Smpl Date-Time 02/22/05 10:50

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	03/14/05 11:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.65	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0065	mg/l	0.0060	0.0030	
Manganese	0.024	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.0	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/07/05 11:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/08/05 13:59	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/24/05 12:40	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

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(916)355-4780

Reported on: 13 APR 2005

EDL #	200158552	**Submitter**	0330
Primary #	STSW 138A	**Charge Number**	SAELNE2X11
Backup #	STSW-138A	**Chain of Custody**	YES
Description	STSW 138A	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/22/05 13:18
AGC Site #	STSW 138A	**Sampler**	ML
Report Distribution	R. FRICKE, EOPS, FILE	**Smpl Date-Time**	02/22/05 10:50

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/04/05 13:31	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 04 MAY 2005

EDL # 200161642
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 03/29/05 15:35
Sampler BH
Smpl Date-Time 03/29/05 12:10

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	04/13/05 19:19	E70080	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	460	ug/l	20	5.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 31 MAY 2005

EDL # 200163081
Primary # STSW 138A
Backup # STSW 138A
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/13/05 14:00
Sampler BH
Smpl Date-Time 04/13/05 10:55

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	04/14/05 14:55	E25619	PRIMARY	1

Comment Matrix spike recoveries for Phosphate >115% due to matrix interferences.

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.4	mg/l	0.10	0.050	
Nitrite	0.074	mg/l	0.050	0.025	
Bromide	0.91	mg/l	0.10	0.050	
Nitrate	0.46	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	C
Sulfate	6.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	05/03/05 17:44	E70080	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	590	ug/l	20	5.0	

EPA 6010 METALS BY ICP, LIQUID — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	04/25/05 11:27	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.026	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.50	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.024	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.4	mg/l	0.050	0.025	
Sodium	8.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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EDL # 200163081
Primary # STSW 138A
Backup # STSW 138A
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/13/05 14:00
Sampler BH
Smpl Date-Time 04/13/05 10:55

EPA 8021 HALOGENATED VOLATILE ORGANICS 8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	04/19/05 15:17	E25639	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	4.0	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

Data Flag Definitions

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D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 FEB 2006

EDL # 200182730
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/14/05 13:00
Sampler KB
Smpl Date-Time 12/14/05 12:01

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/05 17:12	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	2.9	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.30	mg/l	0.10	0.050	
Nitrate	1.6	mg/l	0.10	0.050	
Phosphate	0.50	mg/l	0.30	0.15	
Sulfate	8.6	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	01/09/06 19:26	E70080	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2100	ug/l	80	20	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/17/06 12:24	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.024	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	0.028	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0099	mg/l	0.0060	0.0030	
Manganese	0.012	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	7.8	mg/l	0.050	0.025	
Sodium	8.5	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 07 APR 2006

EDL # 200187480
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/13/06 13:10
Sampler BH
Smpl Date-Time 02/13/06 09:50

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/14/06 16:56	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	2.8	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.24	mg/l	0.10	0.050	
Nitrate	1.7	mg/l	0.10	0.050	
Phosphate	0.62	mg/l	0.30	0.15	
Sulfate	9.8	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	02/24/06 19:57	E70080	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2200	ug/l	80	20	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	02/22/06 10:53	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0090	mg/l	0.0060	0.0030	
Manganese	0.0054	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	7.9	mg/l	0.050	0.025	
Sodium	8.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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(916)355-4780

Reported on: 07 APR 2006

EDL # 200187480
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/13/06 13:10
Sampler BH
Smpl Date-Time 02/13/06 09:50

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/13/06 10:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/22/06 10:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/17/06 11:15	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/21/06 11:10	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Sacramento, CA 95852-1847
(916)355-4780

Analysis Report

Reported on: 22 MAY 2006

EDL # 200193254
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 05/01/06 14:25
Sampler BH
Smpl Date-Time 05/01/06 12:28

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	05/03/06 13:09	E25619	PRIMARY	1

Comment Nitrate, Nitrite and Phosphate exceeded hold times.

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.0	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	J
Nitrate	1.5	mg/l	0.10	0.050	J
Phosphate	< 0.30	mg/l	0.30	0.15	J
Sulfate	8.7	mg/l	0.10	0.050	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	05/11/06 13:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.023	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0092	mg/l	0.0060	0.0030	
Manganese	0.0054	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	7.7	mg/l	0.050	0.025	
Sodium	8.5	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 03 OCT 2006

EDL # 200202095
Primary # STSW 138A
Backup #
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/25/06 13:25
Sampler BB/FIP
Smpl Date-Time 08/25/06 12:26

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/25/06 15:14	E24959	PRIMARY	5

Constituent	Result	Units	PQL	MDL	FLG
Sulfate	9.2	mg/l	0.50	0.25	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/25/06 17:36	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	2.9	mg/l	0.10	0.050	
Bromide	< 0.10	mg/l	0.10	0.050	
Nitrate	1.8	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/15/06 11:04	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.024	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0085	mg/l	0.0060	0.0030	
Manganese	0.0058	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.1	mg/l	0.050	0.025	
Sodium	8.8	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Sacramento, CA 95852-1847
(916)355-4780

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL - Method Detection Limit
PQL - Practical Quantitation Limit
ND - Not Detected above the MDL
FLG - Data Flag

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Analysis Report

Reported on: 19 SEP 2006

EDL # 200202291
Primary # STSW 138A
Backup # STSW 138A
Description STSW 138A
Source Type WATER
AGC Site # STSW 138A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/29/06 10:30
Sampler DH
Smpl Date-Time 08/25/06 12:26

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	09/07/06 00:52	E70080	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	2500	ug/l	80	20	

EPA 8021 HALOGENATED VOLATILE ORGANICS — 8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	08/30/06 13:49	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.8	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

Data Flag Definitions

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E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 AUG 2004

EDL # 200138920
Primary # 166-0701-1001
Description 166-0701-1001
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 10:01

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	07/01/04 14:25	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Bromide	1.0	mg/l	0.10	0.050	
Nitrate	0.34	mg/l	0.10	0.050	
Phosphate	0.30	mg/l	0.30	0.15	
Sulfate	7.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	07/07/04 13:39	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	450	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	07/09/04 12:12	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.025	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0071	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	8.1	mg/l	0.050	0.025	
Sodium	8.7	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 16 AUG 2004

EDL # 200138920
Primary # 166-0701-1001
Description 166-0701-1001
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 10:01

EPA 7060 DISSOLVED ARSENIC, GFAA

7060 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/03/04 09:12	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA

7421 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/04/04 09:41	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR

7470A 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	07/07/04 10:50	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/05/04 10:34	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 14 OCT 2004

EDL # 200145629
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 09/20/04 14:35
Sampler DH
Smpl Date-Time 09/20/04 11:42

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	09/22/04 09:31	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.7	mg/l	0.10	0.050	
Bromide	0.85	mg/l	0.10	0.050	
Nitrate	0.23	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	5.0	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	10/13/04 15:57	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	280	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/23/04 12:02	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.025	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0080	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	13	mg/l	0.14	0.070	
Magnesium	8.1	mg/l	0.050	0.025	
Sodium	8.5	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

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B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 12 JAN 2005

EDL # 200152565
Primary # WNN 166
Backup #
Description WNN 166
Source Type WATER
AGC Site # WNN 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/13/04 14:50
Sampler SR
Smpl Date-Time 12/13/04 13:22

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/06/05 13:05	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0082	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.6	mg/l	0.050	0.025	
Sodium	9.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
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D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 10 JAN 2005

EDL # 200152560
Primary # WNN 166
Backup #
Description WNN 166
Source Type WATER
AGC Site # WNN 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/13/04 14:50
Sampler SR
Smpl Date-Time 12/13/04 13:22

EPA 300.0 ANIONS IN WATER BY IC

300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/13/04 15:51	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.65	mg/l	0.10	0.050	
Nitrate	0.14	mg/l	0.10	0.050	
Phosphate	0.32	mg/l	0.30	0.15	
Sulfate	4.7	mg/l	0.10	0.050	

Data Flag Definitions

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E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 01 FEB 2005

EDL # 200152559
Primary # WNN 166
Backup #
Description WNN 166
Source Type WATER
AGC Site # WNN 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/13/04 14:50
Sampler SR
Smpl Date-Time 12/13/04 13:22

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	12/21/04 14:39	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	190	ug/l	4.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 13 APR 2005

EDL # 200158691
Primary # STSW 166
Backup # STSW 166
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/23/05 16:30
Sampler ML
Smpl Date-Time 02/23/05 08:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/24/05 15:18	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.3	mg/l	0.10	0.050	
Nitrate	0.12	mg/l	0.10	0.050	
Sulfate	6.1	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	03/14/05 14:29	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	190	ug/l	4.0	1.0	

EPA 601 HALOGENATED VOLATILE ORGANICS — 601

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	03/03/05 14:20	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	0.61	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	2.9	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

AEROJET
Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

EDL #	200158691	**Submitter**	0330
Primary #	STSW 166	**Charge Number**	SAELNE2X11
Backup #	STSW 166	**Chain of Custody**	YES
Description	STSW 166	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	02/23/05 16:30
AGC Site #	STSW 166	**Sampler**	ML
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	02/23/05 08:15

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	03/14/05 11:46	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0077	mg/l	0.0060	0.0030	
Manganese	< 0.0050	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.7	mg/l	0.050	0.025	
Sodium	9.1	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/07/05 12:01	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/08/05 14:14	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/24/05 12:50	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

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Reported on: 13 APR 2005

EDL # 200158691
Primary # STSW 166
Backup # STSW 166
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/23/05 16:30
Sampler ML
Smpl Date-Time 02/23/05 08:15

EPA 7740 DISSOLVED SELENIUM, GFAA

7740 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/04/05 13:44	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 31 MAY 2005

EDL # 200163138
Primary # STSW 166
Backup # STSW 166
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/14/05 13:30
Sampler BH
Smpl Date-Time 04/14/05 07:36

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	04/14/05 16:10	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.13	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.46	mg/l	0.10	0.050	
Nitrate	0.11	mg/l	0.10	0.050	
Phosphate	0.37	mg/l	0.30	0.15	
Sulfate	7.3	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	05/05/05 14:34	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	190	ug/l	4.0	1.0	

EPA 6010 METALS BY ICP, LIQUID — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	04/25/05 12:00	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0070	mg/l	0.0060	0.0030	
Manganese	0.0061	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.8	mg/l	0.050	0.025	
Sodium	9.2	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 31 MAY 2005

EDL # 200163138
Primary # STSW 166
Backup # STSW 166
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/14/05 13:30
Sampler BH
Smpl Date-Time 04/14/05 07:36

EPA 8021 HALOGENATED VOLATILE ORGANICS 8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	04/19/05 16:27	E25639	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	2.7	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 06 SEP 2005

EDL # 200172551
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/15/05 14:35
Sampler DH
Smpl Date-Time 08/15/05 10:18

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/15/05 22:33	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Chloride	3.3	mg/l	0.10	0.050	
Nitrate	< 0.10	mg/l	0.10	0.050	
Sulfate	9.2	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	08/25/05 13:20	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	100	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	08/22/05 13:26	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0075	mg/l	0.0060	0.0030	
Manganese	0.0083	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.9	mg/l	0.050	0.025	
Sodium	9.0	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 FEB 2006

EDL #	200182729	**Submitter**	0330
Primary #	STSW 166	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	STSW 166	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	12/14/05 13:00
AGC Site #	STSW 166	**Sampler**	KB
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	12/14/05 10:15

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/05 16:40	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.4	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.34	mg/l	0.10	0.050	
Nitrate	0.13	mg/l	0.10	0.050	
Phosphate	0.52	mg/l	0.30	0.15	
Sulfate	9.4	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	01/05/06 20:06	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	75	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/17/06 12:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.029	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0064	mg/l	0.0060	0.0030	
Manganese	0.0085	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.4	mg/l	0.050	0.025	
Sodium	9.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Sacramento, CA 95852-1847
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Reported on: 07 APR 2006

EDL # 200187511
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/14/06 12:30
Sampler BH
Smpl Date-Time 02/14/06 10:18

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	02/14/06 17:31	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.35	mg/l	0.10	0.050	
Nitrate	0.13	mg/l	0.10	0.050	
Phosphate	0.66	mg/l	0.30	0.15	
Sulfate	9.2	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	02/27/06 16:50	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	110	ug/l	4.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	02/22/06 11:26	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.030	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0061	mg/l	0.0060	0.0030	
Manganese	0.0069	mg/l	0.0050	0.0025	
Calcium	15	mg/l	0.14	0.070	
Magnesium	9.6	mg/l	0.050	0.025	
Sodium	9.5	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 07 APR 2006

EDL # 200187511
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 02/14/06 12:30
Sampler BH
Smpl Date-Time 02/14/06 10:18

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/13/06 12:01	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/22/06 11:28	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	02/17/06 11:25	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	03/21/06 12:17	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 22 MAY 2006

EDL # 200193253
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 05/01/06 14:25
Sampler BH
Smpl Date-Time 05/01/06 10:30

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	05/03/06 13:09	E25619	PRIMARY	1

Comment Nitrate, Nitrite and Phosphate exceeded hold times.

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.38	mg/l	0.030	0.015	
Chloride	3.3	mg/l	0.10	0.050	
Nitrite	< 0.050	mg/l	0.050	0.025	J
Nitrate	< 0.10	mg/l	0.10	0.050	J
Phosphate	0.33	mg/l	0.30	0.15	J
Sulfate	9.1	mg/l	0.10	0.050	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	05/11/06 12:54	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.030	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.016	mg/l	0.0050	0.0025	
Calcium	17	mg/l	0.14	0.070	
Magnesium	10	mg/l	0.050	0.025	
Sodium	10	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
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E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
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(916)355-4780

Analysis Report

Reported on: 03 OCT 2006

EDL # 200202094
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 08/25/06 13:25
Sampler BB/FIP
Smpl Date-Time 08/25/06 10:55

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	08/25/06 17:18	E24959	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	3.0	mg/l	0.10	0.050	
Bromide	0.22	mg/l	0.10	0.050	
Nitrate	0.68	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.0	mg/l	0.10	0.050	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	09/15/06 10:58	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.028	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	1.1	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0062	mg/l	0.0060	0.0030	
Manganese	0.021	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.6	mg/l	0.050	0.025	
Sodium	9.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
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S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Analysis Report

Reported on: 19 SEP 2006

EDL #	200202290	**Submitter**	0330
Primary #	STSW 166	**Charge Number**	SAELNE2X11
Backup #	STSW 166	**Chain of Custody**	YES
Description	STSW 166	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	08/29/06 10:30
AGC Site #	STSW 166	**Sampler**	DH
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	08/25/06 10:55

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-600-B	09/07/06 00:15	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	350	ug/l	4.0	1.0	

EPA 8021 HALOGENATED VOLATILE ORGANICS

8021B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
MPH 6890	08/30/06 13:15	E24948	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Vinyl Chloride	< 0.50	ug/l	0.50	0.25	
Dichlorodifluoromethane	< 0.50	ug/l	0.50	0.25	
Dichloromethane	< 0.50	ug/l	0.50	0.25	
Trichlorofluoromethane	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethene	< 0.50	ug/l	0.50	0.25	
1,1-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethene (cis/trans)	< 0.50	ug/l	0.50	0.25	
Chloroform	< 0.50	ug/l	0.50	0.25	
Freon 113	< 0.50	ug/l	0.50	0.25	
1,2-Dichloroethane	< 0.50	ug/l	0.50	0.25	
1,1,1-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Carbon Tetrachloride	< 0.50	ug/l	0.50	0.25	
Bromodichloromethane	< 0.50	ug/l	0.50	0.25	
1,2-Dichloropropane	< 0.50	ug/l	0.50	0.25	
Trichloroethene	3.4	ug/l	0.50	0.25	
1,1,2-Trichloroethane	< 0.50	ug/l	0.50	0.25	
Dibromochloromethane	< 0.50	ug/l	0.50	0.25	
Bromoform	< 0.50	ug/l	0.50	0.25	
Tetrachloroethene	< 0.50	ug/l	0.50	0.25	
1,1,2,2-Tetrachloroethane	< 0.50	ug/l	0.50	0.25	
Chlorobenzene	< 0.50	ug/l	0.50	0.25	

Data Flag Definitions

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H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
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Definitions

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PQL- Practical Quantitation Limit
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FLG- Data Flag

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Reported on: 12 FEB 2007

EDL # 200210789
Primary # STSW 166
Backup #
Description STSW 166
Source Type WATER
AGC Site # STSW 166
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 12/14/06 14:35
Sampler KB
Smpl Date-Time 12/14/06 09:45

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/06 17:30	E25619	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Nitrite	< 0.050	mg/l	0.050	0.025	
Bromide	0.22	mg/l	0.10	0.050	
Nitrate	0.15	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	12/14/06 18:31	E25619	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Chloride	2.5	mg/l	2.0	1.0	
Sulfate	7.6	mg/l	2.0	1.0	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	01/17/07 12:13	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Arsenic	< 0.080	mg/l	0.080	0.040	
Barium	0.027	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	0.80	mg/l	0.30	0.15	
Lead	< 0.060	mg/l	0.060	0.030	
Nickel	< 0.020	mg/l	0.020	0.010	
Selenium	< 0.10	mg/l	0.10	0.050	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	0.0073	mg/l	0.0060	0.0030	
Manganese	0.0086	mg/l	0.0050	0.0025	
Calcium	14	mg/l	0.14	0.070	
Magnesium	8.9	mg/l	0.050	0.025	
Sodium	9.4	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

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Reported on: 12 FEB 2007

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
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F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET

Environmental Laboratory
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Sacramento, CA 95852-1847
(916)355-4780

Reported on: 09 DEC 2004

EDL # 200149708
Primary # STSW 38A
Backup #
Description STSW 38A
Source Type WATER
AGC Site # STSW 38A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 11/09/04 16:55
Sampler ML
Smpl Date-Time 11/09/04 13:25

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	11/17/04 19:27	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

AEROJET
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(916)355-4780

Reported on: 12 MAY 2005

EDL # 200162537
Primary # STSW 38A
Backup #
Description STSW 38A
Source Type WATER
AGC Site # STSW 38A
Report Distribution EOPS, R. FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 04/06/05 14:45
Sampler BH
Smpl Date-Time 04/06/05 11:30

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	04/28/05 10:46	E70080	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	< 4.0	ug/l	4.0	1.0	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 15 DEC 2004

EDL # 200149680
Primary # STSW 39A
Backup #
Description STSW 39A
Source Type WATER
AGC Site # STSW 39A
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 11/09/04 15:00
Sampler RH
Smpl Date-Time 11/09/04 12:55

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	11/18/04 11:07	E70080	PRIMARY	50

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	4000	ug/l	200	50	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 13 MAY 2005

EDL #	200162751	**Submitter**	0330
Primary #	STSW 39A	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	STSW 39A	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	04/08/05 12:20
AGC Site #	STSW 39A	**Sampler**	BH
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	04/08/05 09:12

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	05/03/05 15:00	E70080	PRIMARY	50

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	4100	ug/l	200	50	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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(916)355-4780

Reported on: 15 DEC 2004

EDL # 200149679
Primary # STSW 39B
Backup #
Description STSW 39B
Source Type WATER
AGC Site # STSW 39B
Report Distribution R. FRICKE, EOPS, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 11/09/04 15:00
Sampler RH
Smpl Date-Time 11/09/04 11:30

EPA 314.0 PERCHLORATE BY IC 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	11/18/04 10:53	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	780	ug/l	40	10	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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(916)355-4780

Reported on: 12 MAY 2005

EDL #	200162538	**Submitter**	0330
Primary #	STSW 39B	**Charge Number**	SAELNE2X11
Backup #		**Chain of Custody**	YES
Description	STSW 39B	**Released By**	E23393
Source Type	WATER	**Recd Date-Time**	04/06/05 14:45
AGC Site #	STSW 39B	**Sampler**	BH
Report Distribution	EOPS, R. FRICKE, FILE	**Smpl Date-Time**	04/06/05 13:39

EPA 314.0 PERCHLORATE BY IC

314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	04/28/05 14:29	E70080	PRIMARY	20

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	980	ug/l	80	20	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte found in associated blank
C- Spiked sample recovery not within control limits
D- Analyte from secondary dilution analysis
E- Analyte exceeds calibration range
F- Estimated concentration due to an interference
G- Duplicate analysis not within control limits
H- Correlation coefficient for MSA less than 0.995
J- Estimated concentration
M- Duplicate precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

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Reported on: 16 AUG 2004

EDL # 200138921
Primary # 80A-0701-1050
Description 80A-0701-1050
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 10:50

EPA 300.0 ANIONS IN WATER BY IC — 300.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500	07/01/04 14:43	E66526	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Fluoride	0.12	mg/l	0.030	0.015	
Chloride	2.3	mg/l	0.10	0.050	
Bromide	< 0.10	mg/l	0.10	0.050	
Nitrate	0.63	mg/l	0.10	0.050	
Phosphate	< 0.30	mg/l	0.30	0.15	
Sulfate	8.2	mg/l	0.10	0.050	

EPA 314.0 PERCHLORATE BY IC — 314.0

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
DIONEX DX-500-3	07/07/04 13:53	E70080	PRIMARY	10

Constituent	Result	Units	PQL	MDL	FLG
Perchlorate	1300	ug/l	40	10	

EPA 6010 DISSOLVED METALS, ICP, LIQUIDS — 3010A — 6010B

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
TJA-61E	07/09/04 12:18	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Aluminum	< 0.20	mg/l	0.20	0.10	
Barium	0.017	mg/l	0.0060	0.0030	
Beryllium	< 0.0010	mg/l	0.0010	0.00050	
Cadmium	< 0.0040	mg/l	0.0040	0.0020	
Chromium	< 0.0080	mg/l	0.0080	0.0040	
Copper	< 0.0060	mg/l	0.0060	0.0030	
Iron	< 0.30	mg/l	0.30	0.15	
Nickel	< 0.020	mg/l	0.020	0.010	
Silver	< 0.020	mg/l	0.020	0.010	
Thallium	< 0.050	mg/l	0.050	0.025	
Zinc	< 0.10	mg/l	0.10	0.050	
Antimony	< 0.20	mg/l	0.20	0.10	
Boron	< 0.040	mg/l	0.040	0.020	
Cobalt	< 0.0080	mg/l	0.0080	0.0040	
Molybdenum	< 0.040	mg/l	0.040	0.020	
Vanadium	< 0.0060	mg/l	0.0060	0.0030	
Manganese	0.012	mg/l	0.0050	0.0025	
Calcium	9.9	mg/l	0.14	0.070	
Magnesium	6.3	mg/l	0.050	0.025	
Sodium	7.3	mg/l	0.80	0.40	
Potassium	< 2.0	mg/l	2.0	1.0	

AEROJET
Environmental Laboratory
Bldg. 02030, P.O. Box 15847
Sacramento, CA 95852-1847
(916)355-4780

Reported on: 16 AUG 2004

EDL # 200138921
Primary # 80A-0701-1050
Description 80A-0701-1050
Source Type LIQUID
Sampler GB
Report Distribution R.FRICKE, FILE

Submitter 0330
Charge Number SAELNE2X11
Chain of Custody YES
Released By E23393
Recd Date-Time 07/01/04 13:25
Smpl Date-Time 07/01/04 10:50

EPA 7060 DISSOLVED ARSENIC, GFAA — 7060 — 7060

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/03/04 09:19	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Arsenic	< 0.0020	mg/l	0.0020	0.00030	

EPA 7421 DISSOLVED LEAD, GFAA — 7421 — 7421

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/04/04 09:49	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Lead	< 0.0020	mg/l	0.0020	0.00060	

EPA 7470 DISSOLVED MERCURY, COLD VAPOR — 7470A — 7470A

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 2380	07/07/04 10:55	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Mercury	< 0.00020	mg/l	0.00020	0.000080	

EPA 7740 DISSOLVED SELENIUM, GFAA — 7740 — 7740

Instrument	Date	Analyst	Sample Analyzed	Dilution Factor
PE 600	08/05/04 10:41	E70180	PRIMARY	1

Constituent	Result	Units	PQL	MDL	FLG
Selenium	< 0.0020	mg/l	0.0020	0.00060	

Data Flag Definitions

A- Suspected aldol condensation product
B- Analyte detected in blank
C- Spiked sample recovery not within control limits (EPA N)
D- Compound ran at second dilution
E- Analyte exceeds calibration range
F- Estimated concentration due to presence of an interference (EPA N)
G- Duplicate analysis not within control limits (EPA*)
H- Correlation coefficient for MSA less than 0.995 (EPA +)
J- Estimated Value
M- Duplicate injection precision not met
N- Presumptive evidence of a compound
S- Concentration determined by method of standard additions

Definitions

MDL- Method Detection Limit
PQL- Practical Quantitation Limit
ND - Not Detected above the MDL
FLG- Data Flag

Calscience Environmental Laboratories

4/5-AUG-03

Calscience Environmental Laboratories, Inc.

August 13, 2003

Scott Felton
GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Subject: **Calscience Work Order No.:** **03-08-0220**
Client Reference: **Aerojet -WNN / TR0018/18**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/6/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 410.4

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
39B-0804-1445	**03-08-0220-1**	**08/04/03**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
39A-0804-1720	**03-08-0220-2**	**08/04/03**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138A-0805-0830	**03-08-0220-3**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW1-0805-0845	**03-08-0220-4**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
38A-0805-1045	**03-08-0220-5**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-062-1,529**	**N/A**	**Aqueous**	**N/A**	**08/07/03**	**30807ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 376.2

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
39B-0804-1445	**03-08-0220-1**	**08/04/03**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
39A-0804-1720	**03-08-0220-2**	**08/04/03**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138A-0805-0830	**03-08-0220-3**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW1-0805-0845	**03-08-0220-4**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
38A-0805-1045	**03-08-0220-5**	**08/05/03**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,402**	**N/A**	**Aqueous**	**N/A**	**08/07/03**	**30807SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 405.1

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
39B-0804-1445	**03-08-0220-1**	**08/04/03**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
39A-0804-1720	**03-08-0220-2**	**08/04/03**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
138A-0805-0830	**03-08-0220-3**	**08/05/03**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
MW1-0805-0845	**03-08-0220-4**	**08/05/03**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
38A-0805-1045	**03-08-0220-5**	**08/05/03**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
Method Blank	**099-05-054-1,314**	**N/A**	**Aqueous**	**08/06/03**	**08/11/03**	**30806BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 410.4

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-08-0112-2	**Aqueous**	**UV 3**	**N/A**	**08/07/03**	**30807ODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chemical Oxygen Demand	790	800	1	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-08-0193-6	**Aqueous**	**N/A**	**N/A**	**08/07/03**	**30807SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide	9.0	9.0	0	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/06/03
Work Order No: 03-08-0220
Preparation: N/A
Method: EPA 405.1

Quality Control Sample ID	Matrix	Instrument	Date Started:	Date Ended:	Duplicate Batch Number
03-08-0193-8	**Aqueous**	**BOD 1**	**08/06/03**	**08/11/03**	**30806BODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Biochemical Oxygen Demand	13	13	0	0-25	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-08-0220

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 08 - 0220

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: CURTIS & TOMPKINS DATE: 8/6/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
2 °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): [signature]

Initial: _____

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	[signature]		
Sample container label(s) consistent with custody papers	[signature]		
Sample container(s) intact and good condition	[signature]		
Correct containers for analyses requested	[signature]		
Proper preservation noted on sample label(s)			
VOA vial(s) free of headspace.			[signature]
Tedlar bag(s) free of condensation			[signature]

Initial: [signature]

COMMENTS:

14.AUG-03

Calscience Environmental Laboratories, Inc.

August 25, 2003

Scott Felton
GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Subject: **Calscience Work Order No.: 03-08-0849**
Client Reference: Aerojet -WNN / TR0018/18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 8/15/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: RSK-175M

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**N/A**	**08/18/03**	**030818L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**N/A**	**08/18/03**	**030818L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0813-1415	**03-08-0849-3**	**08/13/03**	**Aqueous**	**N/A**	**08/18/03**	**030818L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-2-0814-0840	**03-08-0849-4**	**08/14/03**	**Aqueous**	**N/A**	**08/18/03**	**030818L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-391**	**N/A**	**Aqueous**	**N/A**	**08/18/03**	**030818L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 410.4

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**N/A**	**08/18/03**	**30818ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**N/A**	**08/18/03**	**30818ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-062-1,535**	**N/A**	**Aqueous**	**N/A**	**08/18/03**	**30818ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 376.2

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**N/A**	**08/19/03**	**30819SB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**N/A**	**08/19/03**	**30819SB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,411**	**N/A**	**Aqueous**	**N/A**	**08/19/03**	**30819SB2**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 405.1

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**08/15/03**	**08/20/03**	**30815BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**08/15/03**	**08/20/03**	**30815BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
Method Blank	**099-05-054-1,324**	**N/A**	**Aqueous**	**08/15/03**	**08/20/03**	**30815BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 8015B

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**N/A**	**08/15/03**	**030815L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	83	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**N/A**	**08/15/03**	**030815L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	89	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0813-1415	**03-08-0849-3**	**08/13/03**	**Aqueous**	**N/A**	**08/15/03**	**030815L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	91	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-2-0814-0840	**03-08-0849-4**	**08/14/03**	**Aqueous**	**N/A**	**08/15/03**	**030815L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	95	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-800**	**N/A**	**Aqueous**	**N/A**	**08/15/03**	**030815L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	83	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: HPLC/UV

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0814-0720	**03-08-0849-1**	**08/14/03**	**Aqueous**	**N/A**	**08/20/03**	**030819L12**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.8	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0814-0915	**03-08-0849-2**	**08/14/03**	**Aqueous**	**N/A**	**08/20/03**	**030819L12**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0813-1415	**03-08-0849-3**	**08/13/03**	**Aqueous**	**N/A**	**08/20/03**	**030819L12**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	3.7	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-2-0814-0840	**03-08-0849-4**	**08/14/03**	**Aqueous**	**N/A**	**08/20/03**	**030819L12**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.9	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: HPLC/UV

Project: Aerojet -WNN / TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-8**	**N/A**	**Aqueous**	**N/A**	**08/19/03**	**030819L12**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 405.1

Quality Control Sample ID	Matrix	Instrument	Date Started:	Date Ended:	Duplicate Batch Number
03-08-0842-6	**Aqueous**	**BOD 1**	**08/15/03**	**08/20/03**	**30815BODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Biochemical Oxygen Demand	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 410.4

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-08-0826-1	**Aqueous**	**UV 3**	**N/A**	**08/18/03**	**30818ODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chemical Oxygen Demand	300	310	2	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-08-0950-4	**Aqueous**	**N/A**	**N/A**	**08/19/03**	**30819SD2**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 8015B

Project: Aerojet -WNN / TR0018/18

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-08-0844-1	**Aqueous**	**GC12**	**N/A**	**08/15/03**	**030815S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	88	97	64-118	10	0-20	
Ethanol	87	92	73-109	6	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: EPA 8015B

Project: Aerojet -WNN / TR0018/18

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-800	**Aqueous**	**GC12**	**N/A**	**08/15/03**	**030815L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	91	103	69-117	12	0-22	
Ethanol	103	94	76-112	9	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: HPLC/UV

Project: Aerojet -WNN / TR0018/18

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
EW-1-0814-0720	**Aqueous**	**HPLC 6**	**N/A**	**08/19/03**	**030819S12**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	107	107	70-130	0	0-30	
Acetic Acid	100	101	70-130	1	0-30	
Lactic Acid	103	102	70-130	1	0-30	
Propionic Acid	114	108	70-130	5	0-30	
Butyric Acid	110	103	70-130	7	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-016-8	**Aqueous**	**HPLC 6**	**08/19/03**	**03081922**	**030819L12**

Parameter	Conc Added	Conc Recovered	%Rec	%Rec CL	Qualifiers
Pyruvic Acid	20	23	113	80-120	
Acetic Acid	20	21	106	80-120	
Lactic Acid	20	23	114	80-120	
Propionic Acid	20	22	112	80-120	
Butyric Acid	20	20	99	80-120	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet -WNN / TR0018/18

Date Received: 08/15/03
Work Order No: 03-08-0849
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-391	**Aqueous**	**GC 33**	**N/A**	**08/18/03**	**030818L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100	103	79-109	3	0-20	
Ethane	99	102	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-08-0849

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 08 - 0849

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosynlec DATE: 8/15/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
✓ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

* For Sample #1 (EW-1-0814-0720) missing vials for ethanol

8-SEP-03

Calscience Environmental Laboratories, Inc.

September 22, 2003

Scott Felton
GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Subject: **Calscience Work Order No.: 03-09-0502**
Client Reference: Aerojet / TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/10/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 376.2

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0908-1017	**03-09-0502-1**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0908-1112	**03-09-0502-2**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0908-1450	**03-09-0502-3**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0908-1415	**03-09-0502-4**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0908-1332	**03-09-0502-5**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,426**	**N/A**	**Aqueous**	**N/A**	**09/12/03**	**30912SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0908-1017	**03-09-0502-1**	**09/08/03**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0908-1112	**03-09-0502-2**	**09/08/03**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0908-1450	**03-09-0502-3**	**09/08/03**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0908-1415	**03-09-0502-4**	**09/08/03**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0908-1332	**03-09-0502-5**	**09/08/03**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-408**	**N/A**	**Aqueous**	**N/A**	**09/10/03**	**030910L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0908-1017	**03-09-0502-1**	**09/08/03**	**Aqueous**	**N/A**	**09/11/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	94	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0908-1112	**03-09-0502-2**	**09/08/03**	**Aqueous**	**N/A**	**09/11/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	93	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0908-1450	**03-09-0502-3**	**09/08/03**	**Aqueous**	**N/A**	**09/11/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	92	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0908-1415	**03-09-0502-4**	**09/08/03**	**Aqueous**	**N/A**	**09/11/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	93	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0908-1332	**03-09-0502-5**	**09/08/03**	**Aqueous**	**N/A**	**09/12/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	260	10	100		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	82	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-825**	**N/A**	**Aqueous**	**N/A**	**09/11/03**	**030911L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	90	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0908-1017	**03-09-0502-1**	**09/08/03**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.6	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	90	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0908-1112	**03-09-0502-2**	**09/08/03**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	89	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0908-1450	**03-09-0502-3**	**09/08/03**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	89	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0908-1415	**03-09-0502-4**	**09/08/03**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	90	80-120									

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0908-1332	**03-09-0502-5**	**09/08/03**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.7	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	89	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-12**	**N/A**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-09-0531-1	**Aqueous**	**N/A**	**N/A**	**09/12/03**	**30912SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-408	**Aqueous**	**GC 33**	**N/A**	**09/10/03**	**030910L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	101	102	79-109	1	0-20	
Ethane	100	101	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
138-0908-1017	**Aqueous**	**GC12**	**N/A**	**09/11/03**	**030911S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	100	100	64-118	0	0-20	
Ethanol	105	92	73-109	13	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-825	**Aqueous**	**GC12**	**N/A**	**09/11/03**	**030911L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	92	96	69-117	4	0-22	
Ethanol	87	101	76-112	15	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
138-0908-1017	**Aqueous**	**HPLC 6**	**N/A**	**09/19/03**	**030918S04**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	116	70-130	0	0-30	
Acetic Acid	106	106	70-130	0	0-30	
Lactic Acid	99	99	70-130	0	0-30	
Propionic Acid	100	100	70-130	0	0-30	
Butyric Acid	104	112	70-130	7	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/10/03
Work Order No: 03-09-0502
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-12	**Aqueous**	**HPLC 6**	**N/A**	**09/18/03**	**030918L04**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	118	80-120	2	0-20	
Acetic Acid	108	109	80-120	1	0-20	
Lactic Acid	106	107	80-120	1	0-20	
Propionic Acid	99	98	80-120	1	0-20	
Butyric Acid	106	111	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-09-0502

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 09 - 0502

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 9-10-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
6 °C IR thermometer.
_____ Ambient temperature.

Initial: AK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: AK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		~~✓~~ SW
VOA vial(s) free of headspace.	✓		✓ SW
Tedlar bag(s) free of condensation			✓

Initial: AK

COMMENTS:

11-508-03,

Calscience Environmental Laboratories, Inc.

September 22, 2003

Scott Felton
GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Subject: **Calscience Work Order No.: 03-09-0706**
Client Reference: Aerojet / TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/12/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0911-0925	**03-09-0706-1**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0911-1010	**03-09-0706-2**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0911-1020	**03-09-0706-3**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0911-1105	**03-09-0706-4**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0911-1118	**03-09-0706-5**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-412**	**N/A**	**Aqueous**	**N/A**	**09/15/03**	**030915L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0911-0925	**03-09-0706-1**	**09/11/03**	**Aqueous**	**N/A**	**09/16/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	260	10	100		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	90	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0911-1010	**03-09-0706-2**	**09/11/03**	**Aqueous**	**N/A**	**09/16/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	85	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0911-1020	**03-09-0706-3**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	96	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0911-1105	**03-09-0706-4**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	94	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0911-1118	**03-09-0706-5**	**09/11/03**	**Aqueous**	**N/A**	**09/15/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	93	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-829**	**N/A**	**Aqueous**	**N/A**	**09/15/03**	**030915L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	84	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0911-0925	**03-09-0706-1**	**09/11/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	91	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0911-1010	**03-09-0706-2**	**09/11/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	88	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0911-1020	**03-09-0706-3**	**09/11/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	90	80-120									

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0911-1105	**03-09-0706-4**	**09/11/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						
Surrogates:	REC (%)	Control Limits		Qual							
Dibromopropionic Acid	90	80-120									

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0911-1118	**03-09-0706-5**	**09/11/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	88	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-12**	**N/A**	**Aqueous**	**N/A**	**09/18/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-412	Aqueous	GC 33	N/A	09/15/03	030915L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	98	103	79-109	5	0-20	
Ethane	97	102	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-09-0634-1	**Aqueous**	**GC12**	**N/A**	**09/15/03**	**030915S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	87	92	64-118	6	0-20	
Ethanol	100	104	73-109	4	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-829	**Aqueous**	**GC12**	**N/A**	**09/15/03**	**030915L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	84	86	69-117	3	0-22	
Ethanol	95	97	76-112	2	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-09-0502-1	**Aqueous**	**HPLC 6**	**N/A**	**09/19/03**	**030918S04**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	116	70-130	0	0-30	
Acetic Acid	106	106	70-130	0	0-30	
Lactic Acid	99	99	70-130	0	0-30	
Propionic Acid	100	100	70-130	0	0-30	
Butyric Acid	104	112	70-130	7	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/12/03
Work Order No: 03-09-0706
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-12	**Aqueous**	**HPLC 6**	**N/A**	**09/18/03**	**030918L04**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	118	80-120	2	0-20	
Acetic Acid	108	109	80-120	1	0-20	
Lactic Acid	106	107	80-120	1	0-20	
Propionic Acid	99	98	80-120	1	0-20	
Butyric Acid	106	111	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-09-0706

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 09 - 0706

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec Consultants DATE: 9-12-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
13 °C IR thermometer.
_____ Ambient temperature.

Initial: AK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: AK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		~~✓~~
VOA vial(s) free of headspace.	✓		~~✓~~
Tedlar bag(s) free of condensation			✓

Initial: AK

COMMENTS:

16-SEP-03

Calscience Environmental Laboratories, Inc.

September 23, 2003

Scott Felton
GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Subject: **Calscience Work Order No.: 03-09-0956**
Client Reference: Aerojet / TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 9/17/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0916-0935	**03-09-0956-1**	**09/16/03**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0916-1042	**03-09-0956-2**	**09/16/03**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0916-1115	**03-09-0956-3**	**09/16/03**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0916-1150	**03-09-0956-4**	**09/16/03**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0916-1152	**03-09-0956-5**	**09/16/03**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-413**	**N/A**	**Aqueous**	**N/A**	**09/17/03**	**030917L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0916-0935	**03-09-0956-1**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	260	10	100		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	96	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0916-1042	**03-09-0956-2**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	116	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0916-1115	**03-09-0956-3**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	113	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0916-1150	**03-09-0956-4**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	114	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0916-1152	**03-09-0956-5**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	114	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-833**	**N/A**	**Aqueous**	**N/A**	**09/19/03**	**030919L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	109	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0916-0935	**03-09-0956-1**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.6	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	91	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0916-1042	**03-09-0956-2**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.1	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	87	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0916-1115	**03-09-0956-3**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.0	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	89	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0916-1150	**03-09-0956-4**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	89	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0916-1152	**03-09-0956-5**	**09/16/03**	**Aqueous**	**N/A**	**09/19/03**	**030918L04**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.1	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	90	80-120	

Method Blank	099-12-016-12	N/A	Aqueous	N/A	09/18/03	030918L04

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-413	**Aqueous**	**GC 33**	**N/A**	**09/17/03**	**030917L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100	103	79-109	3	0-20	
Ethane	99	102	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-09-0912-1	**Aqueous**	**GC12**	**N/A**	**09/19/03**	**030919S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	94	103	64-118	9	0-20	
Ethanol	99	108	73-109	8	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-833	Aqueous	GC12	N/A	09/19/03	030919L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	100	91	69-117	9	0-22	
Ethanol	94	83	76-112	12	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-09-0502-1	**Aqueous**	**HPLC 6**	**N/A**	**09/19/03**	**030918S04**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	116	70-130	0	0-30	
Acetic Acid	106	106	70-130	0	0-30	
Lactic Acid	99	99	70-130	0	0-30	
Propionic Acid	100	100	70-130	0	0-30	
Butyric Acid	104	112	70-130	7	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
1500 Newell Avenue, Ste. 800
Walnut Creek, CA 94596-5181

Project: Aerojet / TR0018 / 18

Date Received: 09/17/03
Work Order No: 03-09-0956
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-12	**Aqueous**	**HPLC 6**	**N/A**	**09/18/03**	**030918L04**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	116	118	80-120	2	0-20	
Acetic Acid	108	109	80-120	1	0-20	
Lactic Acid	106	107	80-120	1	0-20	
Propionic Acid	99	98	80-120	1	0-20	
Butyric Acid	106	111	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-09-0956

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 09 - 0956

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 9-17-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
15 °C IR thermometer.
_____ Ambient temperature.

Initial: AK

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: AK

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: AK

COMMENTS:

295ep

Calscience Environmental Laboratories, Inc.

October 14, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0

Subject: **Calscience Work Order No.:** **03-10-0008**
Client Reference: **Aerojet / TR0018 / 18**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/1/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0929-0920	**03-10-0008-1**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0929-1008	**03-10-0008-2**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0929-1105	**03-10-0008-3**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0929-1245	**03-10-0008-5**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0929-1310	**03-10-0008-6**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-424**	**N/A**	**Aqueous**	**N/A**	**10/01/03**	**031001L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: EPA 376.2

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0929-0920	**03-10-0008-1**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0929-1008	**03-10-0008-2**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0929-1105	**03-10-0008-3**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
80A-0929-1216	**03-10-0008-4**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0929-1245	**03-10-0008-5**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0929-1310	**03-10-0008-6**	**09/29/03**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,439**	**N/A**	**Aqueous**	**N/A**	**10/01/03**	**31001SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0929-0920	**03-10-0008-1**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	260	10	100		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	116	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0929-1008	**03-10-0008-2**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	117	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0929-1105	**03-10-0008-3**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	109	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
80A-0929-1216	**03-10-0008-4**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	110	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0929-1245	**03-10-0008-5**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	113	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0929-1310	**03-10-0008-6**	**09/29/03**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	114	63-147			

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-840**	**N/A**	**Aqueous**	**N/A**	**10/02/03**	**031002L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L
Surrogates:	REC (%)	Control Limits		Qual	
Hexafluoro-2-propanol	112	63-147			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
RW-1-0929-0920	**03-10-0008-1**	**09/29/03**	**Aqueous**	**N/A**	**10/10/03**	**031010L03**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.8	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	104	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
138-0929-1008	**03-10-0008-2**	**09/29/03**	**Aqueous**	**N/A**	**10/10/03**	**031010L03**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.4	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	102	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
MW-1-0929-1105	**03-10-0008-3**	**09/29/03**	**Aqueous**	**N/A**	**10/10/03**	**031010L03**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.6	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-1-0929-1245	**03-10-0008-5**	**09/29/03**	**Aqueous**	**N/A**	**10/10/03**	**031010L03**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.1	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	104	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Received:	10/01/03
130 Research Lane, Suite 2		Work Order No:	03-10-0008
N1G 5G3		Preparation:	N/A
Guelph, Ontario ,Canada 0		Method:	HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
EW-2-0929-1310	**03-10-0008-6**	**09/29/03**	**Aqueous**	**N/A**	**10/10/03**	**031010L03**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.3	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Method Blank	099-12-016-13	N/A	Aqueous	N/A	10/10/03	031010L03

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	114	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-09-1703-1	**Aqueous**	**N/A**	**N/A**	**10/01/03**	**31001SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	140	130	4	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-424	**Aqueous**	**GC 33**	**N/A**	**10/01/03**	**031001L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	94	103	79-109	9	0-20	
Ethane	93	102	80-120	9	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 10/01/03
130 Research Lane, Suite 2	Work Order No: 03-10-0008
N1G 5G3	Preparation: N/A
Guelph, Ontario ,Canada 0	Method: EPA 8015B
Project: Aerojet / TR0018 / 18	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-09-1710-1	**Aqueous**	**GC12**	**N/A**	**10/02/03**	**031002S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	51	51	64-118	1	0-20	3
Ethanol	97	100	73-109	3	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-840	**Aqueous**	**GC12**	**N/A**	**10/02/03**	**031002L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	90	76	69-117	16	0-22	
Ethanol	106	106	76-112	0	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
RW-1-0929-0920	**Aqueous**	**HPLC 6**	**N/A**	**10/10/03**	**031010S03**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	114	112	70-130	2	0-30	
Acetic Acid	111	108	70-130	2	0-30	
Lactic Acid	109	107	70-130	2	0-30	
Propionic Acid	116	113	70-130	2	0-30	
Butyric Acid	100	95	70-130	6	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario ,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/01/03
Work Order No: 03-10-0008
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-13	**Aqueous**	**HPLC 6**	**N/A**	**10/10/03**	**031010L03**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	111	80-120	0	0-20	
Acetic Acid	110	111	80-120	0	0-20	
Lactic Acid	109	110	80-120	1	0-20	
Propionic Acid	108	112	80-120	3	0-20	
Butyric Acid	93	98	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-10-0008

Qualifier	Definition
3	Spike or Spike Duplicate compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 10 - 0008

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 10/1/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: Tn

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: Tn

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: Tn

COMMENTS:

15-Oct-03

Calscience Environmental Laboratories, Inc.

October 23, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-10-0964**
Client Reference: TR0018/18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/16/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: RSK-175M

Project: TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-10-0964-1**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-0964-2**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	1.10	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-0964-3**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-10-0964-4**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-10-0964-5**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-442**	**N/A**	**Aqueous**	**N/A**	**10/20/03**	**031020L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-10-0964-1**	**10/15/03**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	280	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	107	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-0964-2**	**10/15/03**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-0964-3**	**10/15/03**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	109	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-10-0964-4**	**10/15/03**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	110	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants		Date Received:	10/16/03
130 Research Lane, Suite 2		Work Order No:	03-10-0964
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-10-0964-5**	**10/15/03**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-858**	**N/A**	**Aqueous**	**N/A**	**10/22/03**	**031022L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	102	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: HPLC/UV

Project: TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-10-0964-1**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.6	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-0964-2**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.3	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	95	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-0964-3**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.1	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-10-0964-4**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	86	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

ANALYTICAL REPORT

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: HPLC/UV

Project: TR0018/18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-10-0964-5**	**10/15/03**	**Aqueous**	**N/A**	**10/20/03**	**031020L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	86	80-120	

Method Blank	099-12-016-14	N/A	Aqueous	N/A	10/20/03	031020L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	104	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018/18

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-442	**Aqueous**	**GC 33**	**N/A**	**10/20/03**	**031020L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	106	103	79-109	3	0-20	
Ethane	105	102	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018/18

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**10/20/03**	**031020S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	111	70-130	0	0-30	
Acetic Acid	103	103	70-130	1	0-30	
Lactic Acid	93	89	70-130	5	0-30	
Propionic Acid	104	104	70-130	0	0-30	
Butyric Acid	103	102	70-130	1	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018/18

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-14	**Aqueous**	**HPLC 6**	**N/A**	**10/20/03**	**031020L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	114	114	80-120	0	0-20	
Acetic Acid	105	100	80-120	5	0-20	
Lactic Acid	115	101	80-120	12	0-20	
Propionic Acid	94	105	80-120	11	0-20	
Butyric Acid	101	106	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018/18

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-10-1187-1	**Aqueous**	**GC12**	**N/A**	**10/22/03**	**031022S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	100	100	64-118	0	0-20	
Ethanol	105	101	73-109	4	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018/18

Date Received: 10/16/03
Work Order No: 03-10-0964
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-858	**Aqueous**	**GC12**	**N/A**	**10/22/03**	**031022L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	97	96	69-117	1	0-22	
Ethanol	99	105	76-112	6	0-19	

Calscience Environmental Laboratories, Inc.

GLOSSARY OF TERMS AND QUALIFIERS

Work Order Number: 03-10-0964

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 10 - 0964

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 10/16/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓	✓	
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

WNN-EW-1 -DHGs bottle broken.

Calscience Environmental Laboratories, Inc.

November 10, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-11-0097**
Client Reference: Aerojet / TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/4/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0097-1**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0097-2**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0097-3**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-457**	**N/A**	**Aqueous**	**N/A**	**11/05/03**	**031105L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	11/04/03
130 Research Lane, Suite 2		Work Order No:	03-11-0097
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 376.2

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0097-1**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**31107SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0097-2**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**31107SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0097-3**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**31107SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,461**	**N/A**	**Aqueous**	**N/A**	**11/07/03**	**31107SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	11/04/03
130 Research Lane, Suite 2		Work Order No:	03-11-0097
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0097-1**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	0.54	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	97	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0097-2**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0097-3**	**11/03/03**	**Aqueous**	**N/A**	**11/05/03**	**031105L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	102	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-873**	**N/A**	**Aqueous**	**N/A**	**11/05/03**	**031105L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	97	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0097-1**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0097-2**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0097-3**	**11/03/03**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-15**	**N/A**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	105	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-11-0149-1	**Aqueous**	**N/A**	**N/A**	**11/07/03**	**31107SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 11/04/03
130 Research Lane, Suite 2	Work Order No: 03-11-0097
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet / TR0018 / 18	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-EW-1	**Aqueous**	**GC12**	**N/A**	**11/05/03**	**031105S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	99	99	64-118	0	0-20	
Ethanol	99	101	73-109	2	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-873	**Aqueous**	**GC12**	**N/A**	**11/05/03**	**031105L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	96	95	69-117	1	0-22	
Ethanol	100	98	76-112	2	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**11/07/03**	**031107S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	115	70-130	3	0-30	
Acetic Acid	110	118	70-130	8	0-30	
Lactic Acid	107	115	70-130	7	0-30	
Propionic Acid	113	117	70-130	3	0-30	
Butyric Acid	107	111	70-130	4	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-15	**Aqueous**	**HPLC 6**	**N/A**	**11/07/03**	**031107L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	109	80-120	1	0-20	
Acetic Acid	106	102	80-120	4	0-20	
Lactic Acid	106	105	80-120	1	0-20	
Propionic Acid	112	111	80-120	1	0-20	
Butyric Acid	113	101	80-120	11	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/04/03
Work Order No: 03-11-0097
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-457	**Aqueous**	**GC 33**	**N/A**	**11/05/03**	**031105L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	103	104	79-109	1	0-20	
Ethane	102	103	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-11-0097

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 11 - 0097

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 11/04/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

Calscience Environmental Laboratories, Inc.

November 11, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.:** **03-10-1758**
Client Reference: **Aerojet / TR0018 / 18**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 10/30/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: RSK-175M

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-1758-1**	**10/29/03**	**Aqueous**	**N/A**	**10/30/03**	**031030L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	1.10	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-1758-2**	**10/29/03**	**Aqueous**	**N/A**	**10/30/03**	**031030L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-451**	**N/A**	**Aqueous**	**N/A**	**10/30/03**	**031030L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: EPA 376.2

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-1758-1**	**10/29/03**	**Aqueous**	**N/A**	**11/04/03**	**31104SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-1758-2**	**10/29/03**	**Aqueous**	**N/A**	**11/04/03**	**31104SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**03-10-1758-3**	**10/29/03**	**Aqueous**	**N/A**	**11/04/03**	**31104SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,460**	**N/A**	**Aqueous**	**N/A**	**11/04/03**	**31104SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-1758-1**	**10/29/03**	**Aqueous**	**N/A**	**11/03/03**	**031103L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	112	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-1758-2**	**10/29/03**	**Aqueous**	**N/A**	**11/03/03**	**031103L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	104	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**03-10-1758-3**	**10/29/03**	**Aqueous**	**N/A**	**11/03/03**	**031103L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	96	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-871**	**N/A**	**Aqueous**	**N/A**	**11/03/03**	**031103L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: HPLC/UV

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-10-1758-1**	**10/29/03**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-10-1758-2**	**10/29/03**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-15**	**N/A**	**Aqueous**	**N/A**	**11/07/03**	**031107L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	105	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-10-1729-1	**Aqueous**	**N/A**	**N/A**	**11/04/03**	**31104SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-10-1865-1	**Aqueous**	**GC12**	**N/A**	**11/03/03**	**031103S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	100	93	64-118	8	0-20	
Ethanol	100	95	73-109	6	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-871	**Aqueous**	**GC12**	**N/A**	**11/03/03**	**031103L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	106	106	69-117	0	0-22	
Ethanol	111	109	76-112	2	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-11-0097-1	**Aqueous**	**HPLC 6**	**N/A**	**11/07/03**	**031107S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	115	70-130	3	0-30	
Acetic Acid	110	118	70-130	8	0-30	
Lactic Acid	107	115	70-130	7	0-30	
Propionic Acid	113	117	70-130	3	0-30	
Butyric Acid	107	111	70-130	4	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-15	**Aqueous**	**HPLC 6**	**N/A**	**11/07/03**	**031107L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	111	109	80-120	1	0-20	
Acetic Acid	106	102	80-120	4	0-20	
Lactic Acid	106	105	80-120	1	0-20	
Propionic Acid	112	111	80-120	1	0-20	
Butyric Acid	113	101	80-120	11	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 10/30/03
Work Order No: 03-10-1758
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-451	**Aqueous**	**GC 33**	**N/A**	**10/30/03**	**031030L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	103	103	79-109	0	0-20	
Ethane	101	103	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-10-1758

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 10 - 1758

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 10/30/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace	✓		
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

Stephen Nowak

From: SFelton@GeoSyntec.com
Sent: Friday, November 14, 2003 9:57 AM
To: snowak@calscience.com
Subject: RE: Aerojet job

You should have received some samples on Wed. that only had ethanol requested for analysis. The COC should VFAs and DHGs as well.

-----Original Message-----
From: Steve Nowak [mailto:snowak@calscience.com]
Sent: Friday, November 07, 2003 3:19 PM
To: Scott Felton
Subject: RE: Aerojet job

Scott,

Bottles are on their way.....

-----Original Message-----
From: SFelton@GeoSyntec.com [mailto:SFelton@GeoSyntec.com]
Sent: Friday, November 07, 2003 10:50 AM
To: snowak@calscience.com
Subject: Aerojet job

Steve,

I need more bottles for VFAs, DHGs, and Sulfide about 40 each. Is it possible to get these on Monday?

Calscience Environmental Laboratories, Inc.

RECEIVED
NOV 24 2003

INVOICE

Date: 11/14/2003
Invoice Number: 1048378

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Report Sent To: Jamey Rosen
Calscience Work Order No: 03-11-0379
Project Name/No : Aerojet / TR0018 / 18
Terms: Net 30

Total Amount Due : $ 180.00

Matrix	Test	TAT	Qty	Unit Cost	Subtotal	Rush Surcharge	Total
Water	EPA 8015B Ethanol	5	2	$90.00	$180.00	$0.00	$180.00

Total Amount Due : $180.00

Amounts not paid within terms are subject to a 1.5% per month service charge.
Please include invoice number with your remittance.

PLEASE REMIT TO: **19433 E. WALNUT DRIVE SOUTH**
CITY OF INDUSTRY, CA 91748-2316

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

COPY

Calscience Environmental Laboratories, Inc.

INVOICE

Date: 11/14/2003
Invoice Number: 1048378

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Report Sent To: Jamey Rosen
Calscience Work Order No: 03-11-0379
Project Name/No : Aerojet / TR0018 / 18
Terms: Net 30

Total Amount Due : $ 180.00

Matrix	Test	TAT	Qty	Unit Cost	Subtotal	Rush Surcharge	Total
Water	EPA 8015B Ethanol	5	2	$90.00	$180.00	$0.00	$180.00

Total Amount Due : $180.00

Amounts not paid within terms are subject to a 1.5% per month service charge.
Please include invoice number with your remittance.

PLEASE REMIT TO: **19433 E. WALNUT DRIVE SOUTH**
CITY OF INDUSTRY, CA 91748-2316

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Ste 2
CITY: Guelph, Ontario, Canada N1G5G3
TEL: 519-822-2230 FAX: E-MAIL:

CLIENT PROJECT NAME / NUMBER: TR0018/18
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE) Scott Tolta
P.O. NO.:
QUOTE NO.:
LAB USE ONLY 11-0375

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Total Chromium	Ethanol
1	WNN-TANK		11/5/03	9:45	GW			X
2	WNN-RW-1		11/5/03	10:05	GW			X

Relinquished by: (Signature) Scott Tolta	Received by: (Signature) Fed Ex	Date: 11/6/03	Time: 16:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 11/7/03	Time: 1030

Calscience Environmental Laboratories, Inc.

November 14, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-11-0379**
Client Reference: Aerojet / TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/7/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/07/03
Work Order No: 03-11-0379
Preparation: N/A
Method: EPA 8015B

Project: Aerojet / TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-TANK	**03-11-0379-1**	**11/05/03**	**Aqueous**	**N/A**	**11/13/03**	**031112L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	96	5	50		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0379-2**	**11/05/03**	**Aqueous**	**N/A**	**11/13/03**	**031112L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	29	2	20		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	97	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-882**	**N/A**	**Aqueous**	**N/A**	**11/12/03**	**031112L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/07/03
Work Order No: 03-11-0379
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-11-0575-1	Aqueous	GC12	N/A	11/12/03	031112S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	97	103	64-118	7	0-20	
Ethanol	97	99	73-109	2	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet / TR0018 / 18

Date Received: 11/07/03
Work Order No: 03-11-0379
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-882	**Aqueous**	**GC12**	**N/A**	**11/12/03**	**031112L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	96	91	69-117	5	0-22	
Ethanol	101	97	76-112	4	0-19	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-11-0379

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 11 - 0379

Cooler 1 **of** 1

SAMPLE RECEIPT FORM

CLIENT: Geosynte **DATE:** 11/7/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
3 °C IR thermometer.
_____ Ambient temperature.

Initial: re

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: re

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace	✓		
Tedlar bag(s) free of condensation			✓

Initial: re

COMMENTS:

Calscience Environmental Laboratories, Inc.

November 20, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-11-0594**
Client Reference: TR0018 / 18

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/12/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: RSK-175M

Project: TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0594-2**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0594-3**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0594-4**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-0594-5**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-11-0594-6**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-468**	**N/A**	**Aqueous**	**N/A**	**11/14/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: EPA 8015B

Project: TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN TANK	**03-11-0594-1**	**11/10/03**	**Aqueous**	**N/A**	**11/17/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	160	5	50		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0594-2**	**11/11/03**	**Aqueous**	**N/A**	**11/17/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	230	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0594-3**	**11/11/03**	**Aqueous**	**N/A**	**11/15/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0594-4**	**11/11/03**	**Aqueous**	**N/A**	**11/15/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	11/12/03
130 Research Lane, Suite 2		Work Order No:	03-11-0594
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-0594-5**	**11/11/03**	**Aqueous**	**N/A**	**11/15/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	91	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-11-0594-6**	**11/11/03**	**Aqueous**	**N/A**	**11/15/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-887**	**N/A**	**Aqueous**	**N/A**	**11/15/03**	**031114L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	92	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: HPLC/UV

Project: TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-0594-2**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-0594-3**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-0594-4**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-0594-5**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: HPLC/UV

Project: TR0018 / 18

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-11-0594-6**	**11/11/03**	**Aqueous**	**N/A**	**11/14/03**	**031114L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	95	80-120	

Method Blank	099-12-016-16	N/A	Aqueous	N/A	11/14/03	031114L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	88	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018 / 18

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-468	**Aqueous**	**GC 33**	**N/A**	**11/14/03**	**031114L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	104	104	79-109	0	0-20	
Ethane	104	103	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018 / 18

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-11-0591-1	**Aqueous**	**HPLC 6**	**N/A**	**11/14/03**	**031114S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	103	106	70-130	3	0-30	
Acetic Acid	108	107	70-130	1	0-30	
Lactic Acid	96	96	70-130	0	0-30	
Propionic Acid	102	115	70-130	11	0-30	
Butyric Acid	85	97	70-130	13	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018 / 18

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-16	**Aqueous**	**HPLC 6**	**N/A**	**11/14/03**	**031114L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	110	109	80-120	1	0-20	
Acetic Acid	111	110	80-120	1	0-20	
Lactic Acid	117	115	80-120	1	0-20	
Propionic Acid	113	112	80-120	1	0-20	
Butyric Acid	99	118	80-120	18	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018 / 18

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-11-0725-1	**Aqueous**	**GC12**	**N/A**	**11/15/03**	**031114S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	101	102	64-118	1	0-20	
Ethanol	102	98	73-109	4	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: TR0018 / 18

Date Received: 11/12/03
Work Order No: 03-11-0594
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-887	**Aqueous**	**GC12**	**N/A**	**11/14/03**	**031114L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	98	107	69-117	9	0-22	
Ethanol	104	101	76-112	3	0-19	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-11-0594

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 11 - 0594

Cooler 1 **of** 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 11/12/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

4 °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: [illegible]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: [illegible]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [illegible]

COMMENTS:

Client later requested VFAs & DHGs to samples. WNN-Tank sample only ~~requested~~ received bottles for 8015B ethanol.

Calscience Environmental Laboratories, Inc.

INVOICE

COPY

Date: 11/21/2003
Invoice Number: 1048670

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Report Sent To: Jamey Rosen
Calscience Work Order No: 03-11-0594
Project Name/No : TR0018 / 18
Terms: Net 30

Total Amount Due : $ 1,390.00

Matrix	Test	TAT	Qty	Unit Cost	Subtotal	Rush Surcharge	Total
Water	EPA 8015B Ethanol	5	6	$90.00	$540.00	$0.00	$540.00
Water	Organic Acids by HPLC	10	5	$90.00	$450.00	$0.00	$450.00
Water	RSK-175M (Methane, Ethane, Ethylene)	5	5	$80.00	$400.00	$0.00	$400.00

Total Amount Due : $1,390.00

Amounts not paid within terms are subject to a 1.5% per month service charge.
Please include invoice number with your remittance.

PLEASE REMIT TO: **19433 E. WALNUT DRIVE SOUTH**
CITY OF INDUSTRY, CA 91748-2316

7440 Lincoln Way, Garden Grove, CA 92841-1432 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Stephen Nowak

From: SFelton@GeoSyntec.com
Sent: Friday, November 14, 2003 9:57 AM
To: snowak@calscience.com
Subject: RE: Aerojet job

You should have received some samples on Wed. that only had ethanol requested for analysis. The COC should VFAs and DHGs as well.

-----Original Message-----
From: Steve Nowak [mailto:snowak@calscience.com]
Sent: Friday, November 07, 2003 3:19 PM
To: Scott Felton
Subject: RE: Aerojet job

Scott,

Bottles are on their way.....

-----Original Message-----
From: SFelton@GeoSyntec.com [mailto:SFelton@GeoSyntec.com]
Sent: Friday, November 07, 2003 10:50 AM
To: snowak@calscience.com
Subject: Aerojet job

Steve,

I need more bottles for VFAs, DHGs, and Sulfide about 40 each. Is it possible to get these on Monday?

Calscience
Environmental
Laboratories, Inc.

December 10, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-11-1551**
Client Reference: Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 11/26/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: RSK-175M

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	03-11-1551-1	11/25/03	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	03-11-1551-2	11/25/03	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	2.41	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	03-11-1551-3	11/25/03	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	03-11-1551-4	11/25/03	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	03-11-1551-5	11/25/03	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	099-12-010-485	N/A	Aqueous	N/A	12/01/03	031201L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-1551-1**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	280	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-1551-2**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	112	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**03-11-1551-3**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	93	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-1551-4**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-1551-5**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	108	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**03-11-1551-6**	**11/25/03**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	111	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-901**	**N/A**	**Aqueous**	**N/A**	**12/01/03**	**031201L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	105	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 376.2

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-1551-1**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-1551-2**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**03-11-1551-3**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-1551-4**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-1551-5**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**03-11-1551-6**	**11/25/03**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,494**	**N/A**	**Aqueous**	**N/A**	**12/02/03**	**31202SB3**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-11-1551-1**	**11/25/03**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	105	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-11-1551-2**	**11/25/03**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**03-11-1551-3**	**11/25/03**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-11-1551-4**	**11/25/03**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-11-1551-5**	**11/25/03**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-17**	**N/A**	**Aqueous**	**N/A**	**12/08/03**	**031208L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	108	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
03-11-1523-5	**Aqueous**	**N/A**	**N/A**	**12/02/03**	**31202SD3**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	12	11	9	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-485	**Aqueous**	**GC 33**	**N/A**	**12/01/03**	**031201L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	83	81	79-109	3	0-20	
Ethane	82	80	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
03-11-1573-1	**Aqueous**	**GC12**	**N/A**	**12/01/03**	**031201S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	93	89	64-118	4	0-20	
Ethanol	93	92	73-109	2	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-901	**Aqueous**	**GC12**	**N/A**	**12/01/03**	**031201L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	96	95	69-117	1	0-22	
Ethanol	100	104	76-112	4	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**12/08/03**	**031208S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	112	107	70-130	4	0-30	
Acetic Acid	119	114	70-130	4	0-30	
Lactic Acid	112	110	70-130	2	0-30	
Propionic Acid	102	99	70-130	3	0-30	
Butyric Acid	111	100	70-130	11	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 11/26/03
Work Order No: 03-11-1551
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-17	**Aqueous**	**HPLC 6**	**N/A**	**12/08/03**	**031208L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	107	107	80-120	0	0-20	
Acetic Acid	110	112	80-120	2	0-20	
Lactic Acid	114	112	80-120	1	0-20	
Propionic Acid	99	100	80-120	1	0-20	
Butyric Acid	105	103	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-11-1551

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 11 - 1551

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 11/26/03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

4 °C Temperature blank.
_____ °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: [signature]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: [signature]

COMMENTS:

Sample - 4 one VOA arrived broken

Calscience
Environmental
Laboratories, Inc.

RECEIVED
JAN - 4 2004

December 23, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 03-12-0607**
Client Reference: WNN Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 12/10/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	12/10/03
130 Research Lane, Suite 2		Work Order No:	03-12-0607
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-12-0607-1**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	93	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-12-0607-2**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	105	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-12-0607-3**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-12-0607-4**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	107	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	12/10/03
130 Research Lane, Suite 2		Work Order No:	03-12-0607
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-12-0607-5**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Method Blank	099-12-006-913	N/A	Aqueous	N/A	12/13/03	031212L02

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	87	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**03-12-0607-1**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**03-12-0607-2**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**03-12-0607-3**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**03-12-0607-4**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-12-0607-5**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-18**	**N/A**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: RSK-175M

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	03-12-0607-1	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	03-12-0607-2	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	6.40	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	03-12-0607-3	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	3.68	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	03-12-0607-4	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	03-12-0607-5	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	099-12-010-492	N/A	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 12/10/03
130 Research Lane, Suite 2	Work Order No: 03-12-0607
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: WNN Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**GC12**	**N/A**	**12/13/03**	**031212S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	96	98	64-118	2	0-20	
Ethanol	107	106	73-109	1	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-913	**Aqueous**	**GC12**	**N/A**	**12/13/03**	**031212L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	97	102	69-117	4	0-22	
Ethanol	103	98	76-112	5	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**12/19/03**	**031219S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	106	70-130	3	0-30	
Acetic Acid	102	100	70-130	2	0-30	
Lactic Acid	109	105	70-130	3	0-30	
Propionic Acid	100	98	70-130	2	0-30	
Butyric Acid	106	101	70-130	4	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants	Date Received: 12/10/03
130 Research Lane, Suite 2	Work Order No: 03-12-0607
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV
Project: WNN Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-18	**Aqueous**	**HPLC 6**	**N/A**	**12/19/03**	**031219L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	108	112	80-120	3	0-20	
Acetic Acid	110	101	80-120	9	0-20	
Lactic Acid	113	106	80-120	7	0-20	
Propionic Acid	99	103	80-120	4	0-20	
Butyric Acid	109	107	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-492	**Aqueous**	**GC 33**	**N/A**	**12/10/03**	**031210L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	103	103	79-109	0	0-20	
Ethane	100	100	80-120	0	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-12-0607

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 12 - 0007

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 12-10-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
5 °C IR thermometer.
_____ Ambient temperature.

Initial: MO

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: ✓ No (Not Intact) : _____ Not Applicable (N/A): _____

Initial: MO

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: MO

COMMENTS:

Calscience
Environmental
Laboratories, Inc.

December 23, 2003

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.:** **03-12-0607**
Client Reference: **WNN Aerojet**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 12/10/2003 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: EPA 8015B

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	03-12-0607-1	12/09/03	Aqueous	N/A	12/13/03	031212L02

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	93	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	03-12-0607-2	12/09/03	Aqueous	N/A	12/13/03	031212L02

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	105	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	03-12-0607-3	12/09/03	Aqueous	N/A	12/13/03	031212L02

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	03-12-0607-4	12/09/03	Aqueous	N/A	12/13/03	031212L02

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	107	63-147	

RL - Reporting Limit, DF - Dilution Factor, Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: EPA 8015B

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-12-0607-5**	**12/09/03**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Method Blank	**099-12-006-913**	**N/A**	**Aqueous**	**N/A**	**12/13/03**	**031212L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	87	63-147	

RL - Reporting Limit, DF - Dilution Factor, Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	03-12-0607-1	12/09/03	Aqueous	N/A	12/19/03	031219L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	03-12-0607-2	12/09/03	Aqueous	N/A	12/19/03	031219L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	03-12-0607-3	12/09/03	Aqueous	N/A	12/19/03	031219L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	03-12-0607-4	12/09/03	Aqueous	N/A	12/19/03	031219L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**03-12-0607-5**	**12/09/03**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

Method Blank	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
	099-12-016-18	**N/A**	**Aqueous**	**N/A**	**12/19/03**	**031219L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: RSK-175M

Project: WNN Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	03-12-0607-1	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	03-12-0607-2	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	6.40	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	03-12-0607-3	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	3.68	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	03-12-0607-4	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	03-12-0607-5	12/09/03	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	099-12-010-492	N/A	Aqueous	N/A	12/10/03	031210L02

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit . DF - Dilution Factor . Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	Aqueous	GC12	N/A	12/13/03	031212S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	96	98	64-118	2	0-20	
Ethanol	107	106	73-109	1	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants	Date Received: 12/10/03
130 Research Lane, Suite 2	Work Order No: 03-12-0607
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: WNN Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-913	Aqueous	GC12	N/A	12/13/03	031212L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	97	102	69-117	4	0-22	
Ethanol	103	98	76-112	5	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	Aqueous	HPLC 6	N/A	12/19/03	031219S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	106	70-130	3	0-30	
Acetic Acid	102	100	70-130	2	0-30	
Lactic Acid	109	105	70-130	3	0-30	
Propionic Acid	100	98	70-130	2	0-30	
Butyric Acid	106	101	70-130	4	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-18	Aqueous	HPLC 6	N/A	12/19/03	031219L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	108	112	80-120	3	0-20	
Acetic Acid	110	101	80-120	9	0-20	
Lactic Acid	113	106	80-120	7	0-20	
Propionic Acid	99	103	80-120	4	0-20	
Butyric Acid	109	107	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: WNN Aerojet

Date Received: 12/10/03
Work Order No: 03-12-0607
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-492	Aqueous	GC 33	N/A	12/10/03	031210L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	103	103	79-109	0	0-20	
Ethane	100	100	80-120	0	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 03-12-0607

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 03 - 12 - 0607

Cooler 1 **of** 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec **DATE:** 12-10-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
5 °C IR thermometer.
_____ Ambient temperature.

Initial: MO

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: ✓ No (Not Intact) : _____ Not Applicable (N/A): _____

Initial: MO

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace			
Tedlar bag(s) free of condensation			✓
			✓

Initial: MO

COMMENTS:

Calscience
Environmental
Laboratories, Inc.

January 21, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-01-0177**
Client Reference: Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 1/7/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/07/04
Work Order No: 04-01-0177
Preparation: N/A
Method: RSK-175M

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0177-1**	**01/06/04**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0177-2**	**01/06/04**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0177-3**	**01/06/04**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	2.60	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0177-4**	**01/06/04**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0177-5**	**01/06/04**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-511**	**N/A**	**Aqueous**	**N/A**	**01/07/04**	**040107L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/07/04
Work Order No: 04-01-0177
Preparation: N/A
Method: EPA 376.2

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0177-1**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0177-2**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0177-3**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0177-4**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0177-5**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,516**	**N/A**	**Aqueous**	**N/A**	**01/08/04**	**40108SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/07/04
Work Order No: 04-01-0177
Preparation: N/A
Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0177-1**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**040108L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	290	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	116	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0177-2**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**040108L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	102	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0177-3**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**040108L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	92	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0177-4**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**040108L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 01/07/04
130 Research Lane, Suite 2	Work Order No: 04-01-0177
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0177-5**	**01/06/04**	**Aqueous**	**N/A**	**01/08/04**	**040108L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	85	63-147	

Method Blank	099-12-006-928	N/A	Aqueous	N/A	01/08/04	040108L01

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	106	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/07/04
Work Order No: 04-01-0177
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0177-1**	**01/06/04**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	104	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0177-2**	**01/06/04**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	103	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0177-3**	**01/06/04**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	96	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0177-4**	**01/06/04**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	93	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 01/07/04
130 Research Lane, Suite 2	Work Order No: 04-01-0177
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0177-5**	**01/06/04**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-19**	**N/A**	**Aqueous**	**N/A**	**01/19/04**	**040119L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	95	80-120	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0177
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-511	Aqueous	GC 33	N/A	01/07/04	040107L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	103	105	79-109	2	0-20	
Ethane	100	103	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 01/07/04
Work Order No: 04-01-0177
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
04-01-0175-1	**Aqueous**	**N/A**	**N/A**	**01/08/04**	**40108SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	100	110	10	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 01/07/04
130 Research Lane, Suite 2	Work Order No: 04-01-0177
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-01-0180-1	**Aqueous**	**GC12**	**N/A**	**01/08/04**	**040108S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	104	106	64-118	2	0-20	
Ethanol	98	99	73-109	1	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0177
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-928	**Aqueous**	**GC12**	**N/A**	**01/08/04**	**040108L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	99	99	69-117	0	0-22	
Ethanol	102	102	76-112	0	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 01/07/04
130 Research Lane, Suite 2	Work Order No: 04-01-0177
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV
Project: Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**01/19/04**	**040119S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	108	112	70-130	4	0-30	
Acetic Acid	120	120	70-130	0	0-30	
Lactic Acid	117	117	70-130	0	0-30	
Propionic Acid	97	98	70-130	1	0-30	
Butyric Acid	99	96	70-130	3	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0177
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-19	**Aqueous**	**HPLC 6**	**N/A**	**01/19/04**	**040119L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	100	94	80-120	6	0-20	
Acetic Acid	111	106	80-120	4	0-20	
Lactic Acid	120	115	80-120	4	0-20	
Propionic Acid	96	84	80-120	13	0-20	
Butyric Acid	112	99	80-120	12	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-01-0177

Qualifier	Definition
ND	Not detected at indicated reporting limit.

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 01 - 0177

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOSYNTEC DATE: 1-7-03

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: WB

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: WB

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G5G3
TEL: 519-822-2230 FAX: E-MAIL:

CLIENT PROJECT NAME / NUMBER: Aerojet
PROJECT CONTACT: Janey Rosen
SAMPLER(S): (SIGNATURE) Scott Fulton
P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 01-0177

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Total Chromium	Ethanol	Sulfide	VFAs	DHGs
1	WNN-RW-1		1/6/04	9:50	GW			X	X	X	X
2	WNN-MW1			10:32				X	X	X	X
3	STSW-138A			11:41				X	X	X	X
4	WNN-EW-1			12:10				X	X	X	X
5	WNN-EW-2			12:40				X	X	X	X

Relinquished by: (Signature) Scott Fulton	Received by: (Signature) Fed Ex	Date: 1/6/04	Time: 19:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) FED EX	Received by: (Signature) WChan	Date: 1-7-04	Time: 10:00

Calscience Environmental Laboratories, Inc.

January 26, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-01-0984**
Client Reference: Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 1/21/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/21/04
Work Order No: 04-01-0984
Preparation: N/A
Method: RSK-175M

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0984-1**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0984-2**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0984-3**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	2.73	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0984-4**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0984-5**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-527**	**N/A**	**Aqueous**	**N/A**	**01/22/04**	**040122L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/21/04
Work Order No: 04-01-0984
Preparation: N/A
Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0984-1**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	260	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0984-2**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0984-3**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0984-4**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	106	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 01/21/04
130 Research Lane, Suite 2	Work Order No: 04-01-0984
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0984-5**	**01/20/04**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	110	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-947**	**N/A**	**Aqueous**	**N/A**	**01/22/04**	**040122L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 01/21/04
Work Order No: 04-01-0984
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-01-0984-1**	**01/20/04**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-01-0984-2**	**01/20/04**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-01-0984-3**	**01/20/04**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	96	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-01-0984-4**	**01/20/04**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 01/21/04
130 Research Lane, Suite 2	Work Order No: 04-01-0984
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-01-0984-5**	**01/20/04**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	95	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-20**	**N/A**	**Aqueous**	**N/A**	**01/23/04**	**040123L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	91	80-120	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0984
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-527	**Aqueous**	**GC 33**	**N/A**	**01/22/04**	**040122L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	109	103	79-109	6	0-20	
Ethane	106	101	80-120	5	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 01/21/04
Work Order No: 04-01-0984
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-MW-1	**Aqueous**	**GC12**	**N/A**	**01/22/04**	**040122S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	100	100	64-118	0	0-20	
Ethanol	100	102	73-109	3	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0984
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-947	Aqueous	GC12	N/A	01/22/04	040122L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	97	94	69-117	3	0-22	
Ethanol	99	99	76-112	0	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 01/21/04
Work Order No: 04-01-0984
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**01/23/04**	**040123S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	98	99	70-130	1	0-30	
Acetic Acid	107	105	70-130	2	0-30	
Lactic Acid	113	109	70-130	4	0-30	
Propionic Acid	81	82	70-130	1	0-30	
Butyric Acid	112	109	70-130	3	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - Laboratory Control Sample

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-01-0984
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Analyzed	Lab File ID	LCS Batch Number
099-12-016-20	Aqueous	HPLC 6	01/23/04	04012304	040123L01

Parameter	Conc Added	Conc Recovered	%Rec	%Rec CL	Qualifiers
Pyruvic Acid	20	20	100	80-120	
Acetic Acid	20	23	113	80-120	
Lactic Acid	20	23	117	80-120	
Propionic Acid	20	16	80	80-120	
Butyric Acid	20	23	113	80-120	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-01-0984

Qualifier	Definition
ND	Not detected at indicated reporting limit.
X	% Recovery and/or RPD out-of-range.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 01 - 0984

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOSYNTEC DATE: 1-21-04

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: WB

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: WB

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec
ADDRESS: 130 Research Lane, Ste #2
CITY: Guelph, Ontario, Canada
TEL: 519-822-2230 FAX: E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE)
P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 01-0984

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Total Chromium	Ethanol	VFAs	DHGs
1	WNN-RW-1		1/20/04	9:55	GW			X	X	X
2	WNN-MW1			10:32				X	X	X
3	STSW-138A			11:46				X	X	X
4	WNN-EW-1			12:20				X	X	X
5	WNN-EW-2			12:50				X	X	X

Relinquished by: (Signature)	Received by: (Signature)	Date: 1/20/04	Time: 16:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) FEDEX	Received by: (Signature)	Date: 1-21-04	Time: 10:00

Calscience Environmental Laboratories, Inc.

February 11, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-02-0187**
Client Reference: Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 2/4/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: RSK-175M

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0187-1**	**02/03/04**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0187-2**	**02/03/04**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	2.15	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-02-0187-3**	**02/03/04**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	6.34	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0187-4**	**02/03/04**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0187-5**	**02/03/04**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-539**	**N/A**	**Aqueous**	**N/A**	**02/05/04**	**040205L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: EPA 376.2

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0187-1**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0187-2**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-02-0187-3**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0187-4**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0187-5**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-02-0187-6**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,531**	**N/A**	**Aqueous**	**N/A**	**02/09/04**	**40209SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0187-1**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	250	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0187-2**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-02-0187-3**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0187-4**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 02/04/04
130 Research Lane, Suite 2	Work Order No: 04-02-0187
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0187-5**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	93	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-02-0187-6**	**02/03/04**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	92	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-970**	**N/A**	**Aqueous**	**N/A**	**02/09/04**	**040209L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0187-1**	**02/03/04**	**Aqueous**	**N/A**	**02/07/04**	**040206L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.7	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0187-2**	**02/03/04**	**Aqueous**	**N/A**	**02/07/04**	**040206L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	0.72	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-02-0187-3**	**02/03/04**	**Aqueous**	**N/A**	**02/07/04**	**040206L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0187-4**	**02/03/04**	**Aqueous**	**N/A**	**02/07/04**	**040206L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0187-5**	**02/03/04**	**Aqueous**	**N/A**	**02/07/04**	**040206L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Method Blank	099-12-016-21	N/A	Aqueous	N/A	02/07/04	040206L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	96	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0187
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-539	Aqueous	GC 33	N/A	02/05/04	040205L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	101	95	79-109	6	0-20	
Ethane	101	97	80-120	4	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
04-02-0212-1	**Aqueous**	**N/A**	**N/A**	**02/09/04**	**40209SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 02/04/04
130 Research Lane, Suite 2	Work Order No: 04-02-0187
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-02-0157-1	**Aqueous**	**GC12**	**N/A**	**02/09/04**	**040209S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	91	94	64-118	3	0-20	
Ethanol	103	105	73-109	2	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0187
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-970	**Aqueous**	**GC12**	**N/A**	**02/09/04**	**040209L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	94	98	69-117	3	0-22	
Ethanol	103	107	76-112	4	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: 02/04/04
Work Order No: 04-02-0187
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**02/07/04**	**040206S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	103	105	70-130	2	0-30	
Acetic Acid	114	116	70-130	2	0-30	
Lactic Acid	127	129	70-130	2	0-30	
Propionic Acid	97	97	70-130	0	0-30	
Butyric Acid	110	114	70-130	3	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0187
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-21	**Aqueous**	**HPLC 6**	**N/A**	**02/07/04**	**040206L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	105	104	80-120	0	0-20	
Acetic Acid	110	106	80-120	3	0-20	
Lactic Acid	116	119	80-120	2	0-20	
Propionic Acid	95	95	80-120	0	0-20	
Butyric Acid	100	97	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-02-0187

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 02 - 0187

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 02/04/2004

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
3 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.			✓
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE)
P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 02-0187

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ___/___/___

SPECIAL INSTRUCTIONS

ORIGINAL

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
1	WNN-RW-1		02/03/04	9:55	GW	5	X	X	X	X
2	WNN-MW1		02/03/04	11:30	GW	5	X	X	X	X
3	STSW-138A		02/03/04	10:40	GW	5	X	X	X	X
4	WNN-EW-1		02/03/04	12:48	GW	5	X	X	X	X
5	WNN-EW-2		02/03/04	11:55	GW	5	X	X	X	X
6	STSW-80A		02/03/04	12:30	GW	3	X			X

REQUESTED ANALYSIS

Relinquished by: (Signature) Graham Bradner	Received by: (Signature)	Date: 2/3/04	Time: 17:20
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 2/4/04	Time: 1000

Calscience
Environmental
Laboratories, Inc.

February 20, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-02-0589**
Client Reference: Aerojet WNN

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 2/11/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/11/04
Work Order No: 04-02-0589
Preparation: N/A
Method: RSK-175M

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-02-0589-1**	**02/10/04**	**Aqueous**	**N/A**	**02/11/04**	**040211L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-545**	**N/A**	**Aqueous**	**N/A**	**02/11/04**	**040211L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	02/11/04
130 Research Lane, Suite 2		Work Order No:	04-02-0589
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	HPLC/UV

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-02-0589-1**	**02/10/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Method Blank	099-12-016-22	N/A	Aqueous	N/A	02/18/04	040218L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: N/A
Work Order No: 04-02-0589
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-545	**Aqueous**	**GC 33**	**N/A**	**02/11/04**	**040211L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100	101	79-109	1	0-20	
Ethane	100	101	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: 02/11/04
Work Order No: 04-02-0589
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-02-0978-1	**Aqueous**	**HPLC 6**	**N/A**	**02/18/04**	**040218S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	113	70-130	4	0-30	
Acetic Acid	115	118	70-130	3	0-30	
Lactic Acid	105	110	70-130	5	0-30	
Propionic Acid	82	93	70-130	12	0-30	
Butyric Acid	93	98	70-130	6	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: N/A
Work Order No: 04-02-0589
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-22	**Aqueous**	**HPLC 6**	**N/A**	**02/18/04**	**040218L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	111	80-120	2	0-20	
Acetic Acid	116	113	80-120	3	0-20	
Lactic Acid	108	110	80-120	2	0-20	
Propionic Acid	81	82	80-120	2	0-20	
Butyric Acid	93	95	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-02-0589

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 02 - 0589

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOSYNTEC DATE: 2/11/04

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4 °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): [signature]

Initial: [signature]

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	[signature]		
Sample container label(s) consistent with custody papers	[signature]		
Sample container(s) intact and good condition	[signature]		
Correct containers for analyses requested	[signature]		
Proper preservation noted on sample label(s)			
VOA vial(s) free of headspace.			
Tedlar bag(s) free of condensation			

Initial: [signature]

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: **GeoSyntec Consultants**

ADDRESS: **130 Research Lane, Suite 2**

CITY: **Guelph, Ontario N1G 5G3**

TEL: **519-822-2230** | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: **Aerojet-WNN**

PROJECT CONTACT: **Jamey Rosen**

SAMPLER(S): (SIGNATURE)

P.O. NO.:

QUOTE NO.:

LAB USE ONLY: 02-0589

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
	STSW-166		02/10/04		GW	2		X	X	

Relinquished by: (Signature) Scott Fleck — Received by: (Signature) Ted Fe — Date: 2/10/04 — Time: 16:00

Relinquished by: (Signature) — Received by: (Signature) — Date: — Time:

Relinquished by: (Signature) FEDEX — Received by: (Signature) — Date: 2/11/04 — Time: 1100

Calscience Environmental Laboratories, Inc.

February 23, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-02-0978**
Client Reference: Aerojet

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 2/18/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/18/04
Work Order No: 04-02-0978
Preparation: N/A
Method: RSK-175M

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0978-1**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0978-2**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0978-3**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0978-4**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	2.09	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-02-0978-5**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	10.3	1.0	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-551**	**N/A**	**Aqueous**	**N/A**	**02/18/04**	**040218L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	02/18/04
130 Research Lane, Suite 2		Work Order No:	04-02-0978
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0978-1**	**02/17/04**	**Aqueous**	**N/A**	**02/20/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	250	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	107	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0978-2**	**02/17/04**	**Aqueous**	**N/A**	**02/19/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	104	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0978-3**	**02/17/04**	**Aqueous**	**N/A**	**02/19/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0978-4**	**02/17/04**	**Aqueous**	**N/A**	**02/20/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	116	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 02/18/04
130 Research Lane, Suite 2	Work Order No: 04-02-0978
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-02-0978-5**	**02/17/04**	**Aqueous**	**N/A**	**02/20/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	89	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-986**	**N/A**	**Aqueous**	**N/A**	**02/19/04**	**040219L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 02/18/04
Work Order No: 04-02-0978
Preparation: N/A
Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-02-0978-1**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-02-0978-2**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-02-0978-3**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-02-0978-4**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.2	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	102	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 02/18/04
130 Research Lane, Suite 2	Work Order No: 04-02-0978
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV

Project: Aerojet

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-02-0978-5**	**02/17/04**	**Aqueous**	**N/A**	**02/18/04**	**040218L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	102	80-120	

Method Blank	099-12-016-22	N/A	Aqueous	N/A	02/18/04	040218L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0978
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-551	Aqueous	GC 33	N/A	02/18/04	040218L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	101	100	79-109	1	0-20	
Ethane	101	100	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 02/18/04
130 Research Lane, Suite 2	Work Order No: 04-02-0978
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-02-1001-1	**Aqueous**	**GC12**	**N/A**	**02/19/04**	**040219S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	101	98	64-118	3	0-20	
Ethanol	104	101	73-109	3	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0978
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-986	Aqueous	GC12	N/A	02/19/04	040219L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	101	99	69-117	2	0-22	
Ethanol	104	103	76-112	0	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 02/18/04
130 Research Lane, Suite 2	Work Order No: 04-02-0978
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV
Project: Aerojet	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**02/18/04**	**040218S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	113	70-130	4	0-30	
Acetic Acid	115	118	70-130	3	0-30	
Lactic Acid	105	110	70-130	5	0-30	
Propionic Acid	82	93	70-130	12	0-30	
Butyric Acid	93	98	70-130	6	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet

Date Received: N/A
Work Order No: 04-02-0978
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-22	**Aqueous**	**HPLC 6**	**N/A**	**02/18/04**	**040218L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	109	111	80-120	2	0-20	
Acetic Acid	116	113	80-120	3	0-20	
Lactic Acid	108	110	80-120	2	0-20	
Propionic Acid	81	82	80-120	2	0-20	
Butyric Acid	93	95	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-02-0978

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 02 - 0978

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 02/18/2004

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
3 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: **GeoSyntec Consultants**

ADDRESS: **130 Research Lane, Suite 2**

CITY: **Guelph, Ontario N1G 5G3**

TEL: **519-822-2230** | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: **Aerojet-WNN**

PROJECT CONTACT: **Jamey Rosen**

SAMPLER(S): (SIGNATURE) Scott Fields

P.O. NO.:

QUOTE NO.:

LAB USE ONLY 02-0978

TURNAROUND TIME

☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)

☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
1	WNN-RW-1		02/17/04	13:50	GW		X	X	X	
2	WNN-EW-1		02/17/04	14:15	GW		X	X	X	
3	WNN-EW-2		02/17/04	14:30	GW		X	X	X	
4	WNN-MW1		02/17/04	10:41	GW		X	X	X	
5	WNN-138A		02/17/04	11:50	GW		X	X	X	

Relinquished by: (Signature) Scott Fields	Received by: (Signature) Fed Ex	Date: 2/17/04	Time: 19:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) FedEx	Received by: (Signature)	Date: 2/18/04	Time: 1000

Calscience Environmental Laboratories, Inc.

March 11, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-03-0264**
Client Reference: Aerojet WNN

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 3/4/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 03/04/04
Work Order No: 04-03-0264
Preparation: N/A
Method: RSK-175M

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-03-0264-1**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-03-0264-2**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-03-0264-3**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-03-0264-4**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-03-0264-5**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	1.33	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-569**	**N/A**	**Aqueous**	**N/A**	**03/08/04**	**040308L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 03/04/04
Work Order No: 04-03-0264
Preparation: N/A
Method: EPA 376.2

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-03-0264-1**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-03-0264-2**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-03-0264-3**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-03-0264-4**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-03-0264-5**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-03-0264-7**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,545**	**N/A**	**Aqueous**	**N/A**	**03/05/04**	**40305SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 03/04/04
Work Order No: 04-03-0264
Preparation: N/A
Method: EPA 8015B

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-03-0264-1**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	10	0.20	2		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	108	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-03-0264-2**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	107	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-03-0264-3**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	103	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-03-0264-4**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 03/04/04
130 Research Lane, Suite 2	Work Order No: 04-03-0264
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-03-0264-5**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	96	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-03-0264-6**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-03-0264-7**	**03/02/04**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-1,002**	**N/A**	**Aqueous**	**N/A**	**03/05/04**	**040305L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	101	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 03/04/04
Work Order No: 04-03-0264
Preparation: N/A
Method: HPLC/UV

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-03-0264-1**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.9	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-03-0264-2**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.0	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-03-0264-3**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.5	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	99	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-03-0264-4**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	1.7	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 03/04/04
130 Research Lane, Suite 2	Work Order No: 04-03-0264
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV

Project: Aerojet WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-03-0264-5**	**03/02/04**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	2.1	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-23**	**N/A**	**Aqueous**	**N/A**	**03/08/04**	**040308L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

7440 Lincoln Way, Garden Grove, CA 92841-1427 • TEL: (714) 895-5494 • FAX: (714) 894-7501

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants	Date Received: 03/04/04
130 Research Lane, Suite 2	Work Order No: 04-03-0264
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 376.2
Project: Aerojet WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
04-03-0284-1	**Aqueous**	**N/A**	**N/A**	**03/05/04**	**40305SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 03/04/04
130 Research Lane, Suite 2	Work Order No: 04-03-0264
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-03-0002-1	Aqueous	GC12	N/A	03/05/04	040305S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	111	108	64-118	2	0-20	
Ethanol	94	78	73-109	18	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: N/A
Work Order No: 04-03-0264
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-1,002	**Aqueous**	**GC12**	**N/A**	**03/05/04**	**040305L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	107	108	69-117	1	0-22	
Ethanol	103	110	76-112	7	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 03/04/04
130 Research Lane, Suite 2	Work Order No: 04-03-0264
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV
Project: Aerojet WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**03/08/04**	**040308S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	107	107	70-130	0	0-30	
Acetic Acid	103	102	70-130	1	0-30	
Lactic Acid	102	106	70-130	3	0-30	
Propionic Acid	97	100	70-130	3	0-30	
Butyric Acid	94	91	70-130	4	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: N/A
Work Order No: 04-03-0264
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-23	**Aqueous**	**HPLC 6**	**N/A**	**03/08/04**	**040308L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	110	111	80-120	1	0-20	
Acetic Acid	107	108	80-120	1	0-20	
Lactic Acid	110	115	80-120	5	0-20	
Propionic Acid	101	104	80-120	3	0-20	
Butyric Acid	97	98	80-120	2	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet WNN

Date Received: N/A
Work Order No: 04-03-0264
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-569	**Aqueous**	**GC 33**	**N/A**	**03/08/04**	**040308L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	99	101	79-109	3	0-20	
Ethane	98	101	80-120	3	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-03-0264

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 03 - 0264

Cooler 1 **of** 1

SAMPLE RECEIPT FORM

CLIENT: GEOSYNTEC **DATE:** 3/4/09

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
2 °C IR thermometer.
_____ Ambient temperature.

Initial: [signature]

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): [signature]

Initial: _____

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	[signature]		
Sample container label(s) consistent with custody papers	[signature]		
Sample container(s) intact and good condition	[signature]		
Correct containers for analyses requested	[signature]		
Proper preservation noted on sample label(s)	[signature]		
VOA vial(s) free of headspace.			
Tedlar bag(s) free of condensation			[signature]

Initial: _____

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE) Scott Fulton
P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 03-0264

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
1	WNN-RW-1		03/02/04	10:00	GW		X	X	X	X
2	WNN-EW-1		03/02/04	13:30	GW		X	X	X	X
3	WNN-EW-2		03/02/04	14:00	GW		X	X	X	X
4	WNN-MW1		03/02/04	9:37	GW		X	X	X	X
5	WNN-138A		03/02/04	10:43	GW		X	X	X	X
6	STSW-166		03/02/04	12:06	GW		X			
7	STSW-80A		03/02/04	13:04	GW		X			X

Relinquished by: (Signature) Scott Fulton	Received by: (Signature) Fed Ex	Date: 3/2/04	Time: 18:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) Hassan Gaffar	Date: 3-4-04	Time: 1030

Calscience Environmental Laboratories, Inc.

March 23, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-03-1028**
Client Reference: Aerojet - WNN

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 3/17/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 03/17/04
Work Order No: 04-03-1028
Preparation: N/A
Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-03-1028-1**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	270	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	120	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-03-1028-2**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	102	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-03-1028-3**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	118	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-03-1028-4**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	121	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 03/17/04
130 Research Lane, Suite 2	Work Order No: 04-03-1028
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-03-1028-5**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	117	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-03-1028-6**	**03/16/04**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	112	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-1,013**	**N/A**	**Aqueous**	**N/A**	**03/18/04**	**040318L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	124	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Project: Aerojet - WNN

Date Received:	03/17/04
Work Order No:	04-03-1028
Preparation:	N/A
Method:	EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-EW-1	**Aqueous**	**GC12**	**N/A**	**03/18/04**	**040318S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	108	103	64-118	4	0-20	
Ethanol	105	91	73-109	15	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-03-1028
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-1,013	Aqueous	GC12	N/A	03/18/04	040318L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	105	101	69-117	5	0-22	
Ethanol	100	104	76-112	4	0-19	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-03-1028

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE)

P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 03-1028

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
	WNN-RW-1		03/16/04	9:55	GW	2	X			
	WNN-EW-1		03/16/04	10:35	GW	2	X			
	WNN-EW-2		03/16/04	13:00	GW	2	X			
	WNN-MW1		03/16/04	11:56	GW	2	X			
	WNN-138A		03/16/04	12:23	GW	2	X			
	STSW-166		03/16/04	13:39	GW	2	X			

Relinquished by: (Signature) Scott Talbot	Received by: (Signature) Fed Ex	Date: 3/16/04	Time: 16:30
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature) Fed Ex	Received by: (Signature)	Date: 3/17/04	Time: 1030

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 03 - 1028

Cooler (of (

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec DATE: 03/17/2004

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.

_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
3.6 °C IR thermometer.
_____ Ambient temperature.

Initial: NC

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: NC

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: NC

COMMENTS:

Calscience Environmental Laboratories, Inc.

April 06, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.:** **04-04-0006**
Client Reference: **Aerojet - WNN**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/1/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants		Date Received:	04/01/04
130 Research Lane, Suite 2		Work Order No:	04-04-0006
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	RSK-175M

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0006-1**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0006-2**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0006-3**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-0006-4**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	12.1	1.0	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0006-5**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	7.70	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-586**	**N/A**	**Aqueous**	**N/A**	**04/01/04**	**040401L02**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Methane	ND	1.00	1		ug/L	Ethylene	ND	1.00	1		ug/L
Ethane	ND	1.00	1		ug/L						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/01/04
Work Order No: 04-04-0006
Preparation: N/A
Method: EPA 376.2

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0006-1**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0006-2**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0006-3**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-0006-4**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0006-5**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-04-0006-7**	**03/31/04**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,564**	**N/A**	**Aqueous**	**N/A**	**04/05/04**	**40405SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/01/04
Work Order No: 04-04-0006
Preparation: N/A
Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0006-1**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	300	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0006-2**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0006-3**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	86	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-0006-4**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	104	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 04/01/04
130 Research Lane, Suite 2	Work Order No: 04-04-0006
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0006-5**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	86	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-04-0006-6**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	85	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-04-0006-7**	**03/31/04**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-1,021**	**N/A**	**Aqueous**	**N/A**	**04/02/04**	**040402L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	96	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/01/04
Work Order No: 04-04-0006
Preparation: N/A
Method: HPLC/UV

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0006-1**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0006-2**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	100	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0006-3**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-0006-4**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	4.2	1.0	1		mg/L
Acetic Acid	13	1	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 04/01/04
130 Research Lane, Suite 2	Work Order No: 04-04-0006
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0006-5**	**03/31/04**	**Aqueous**	**N/A**	**04/01/04**	**040401L01**

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	101	80-120	

Method Blank	099-12-016-25	N/A	Aqueous	N/A	04/01/04	040401L01

Parameter	Result	RL	DF	Qual	Units	Parameter	Result	RL	DF	Qual	Units
Pyruvic Acid	ND	0.50	1		mg/L	Propionic Acid	ND	1.0	1		mg/L
Acetic Acid	ND	1.0	1		mg/L	Butyric Acid	ND	1.0	1		mg/L
Lactic Acid	ND	1.0	1		mg/L						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	102	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - Duplicate

GeoSyntec Consultants	Date Received: 04/01/04
130 Research Lane, Suite 2	Work Order No: 04-04-0006
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 376.2
Project: Aerojet - WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
04-04-0121-1	**Aqueous**	**N/A**	**N/A**	**04/05/04**	**40405SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-0006
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-582	Aqueous	GC 33	N/A	04/01/04	040401L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	101	101	79-109	0	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 04/01/04
130 Research Lane, Suite 2	Work Order No: 04-04-0006
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B
Project: Aerojet - WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-EW-1	**Aqueous**	**GC12**	**N/A**	**04/02/04**	**040402S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	98	81	64-118	20	0-20	
Ethanol	99	97	73-109	3	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-0006
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-1,021	Aqueous	GC12	N/A	04/02/04	040402L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	93	94	69-117	1	0-22	
Ethanol	98	95	76-112	3	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: 04/01/04
Work Order No: 04-04-0006
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
04-03-1855-1	**Aqueous**	**HPLC 6**	**N/A**	**04/02/04**	**040401S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	93	94	70-130	1	0-30	
Acetic Acid	98	106	70-130	8	0-30	
Lactic Acid	93	93	70-130	0	0-30	
Propionic Acid	74	91	70-130	20	0-30	
Butyric Acid	97	97	70-130	0	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-0006
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-25	**Aqueous**	**HPLC 6**	**N/A**	**04/01/04**	**040401L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	110	111	80-120	0	0-20	
Acetic Acid	109	110	80-120	1	0-20	
Lactic Acid	114	114	80-120	0	0-20	
Propionic Acid	91	91	80-120	0	0-20	
Butyric Acid	96	96	80-120	0	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-04-0006

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 04 - 0006

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GeoSyntec **DATE:** 4-1-04

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4.2 °C IR thermometer.
_____ Ambient temperature.

Initial: HG

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: HG

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: HG

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE) Scott Tibbs
P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 04-0006

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
1	WNN-RW-1		03/31/04	9:55	GW		X	X	X	X
2	WNN-EW-1		03/31/04	10:45	GW		X	X	X	X
3	WNN-EW-2		03/31/04	11:35	GW		X	X	X	X
4	WNN-MW1		03/31/04	10:30	GW		X	X	X	X
5	WNN-138A		03/31/04	11:19	GW		X	X	X	X
6	STSW-166		03/31/04	12:18	GW		X			
7	STSW-80A		03/31/04	13:09	GW		X			X

Relinquished by: (Signature) Scott Tibbs	Received by: (Signature) Fed Ex	Date: 3/31/04	Time: 18:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) Hassan Gaffar	Date: 4-1-04	Time: 1030

Calscience
Environmental
Laboratories, Inc.

April 20, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-04-0707**
Client Reference: Aerojet - WNN

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/14/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: RSK-175M
Unit: ug/L

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	04-04-0707-1	04/13/04	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	04-04-0707-2	04/13/04	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	04-04-0707-3	04/13/04	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	04-04-0707-4	04/13/04	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	23.2	1.0	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	04-04-0707-5	04/13/04	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	7.17	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	099-12-010-597	N/A	Aqueous	N/A	04/15/04	040415L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0707-1**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	290	10	100		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	109	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0707-2**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	109	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0707-3**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	99	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-04-0707-4**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	94	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 04/14/04
130 Research Lane, Suite 2	Work Order No: 04-04-0707
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0707-5**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	100	63-147	

Method Blank	099-12-006-1,035	N/A	Aqueous	N/A	04/15/04	040415L01

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	116	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: HPLC/UV
Unit: mg/L

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-0707-1**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	98	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-0707-2**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	96	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-0707-3**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**04-04-0707-4**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	5.3	1.0	1	
Acetic Acid	13	1	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: HPLC/UV
Unit: mg/L

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-138A	**04-04-0707-5**	**04/13/04**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-26**	**N/A**	**Aqueous**	**N/A**	**04/15/04**	**040415L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	97	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-0707
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-597	Aqueous	GC 33	N/A	04/15/04	040415L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	93	100	79-109	8	0-20	
Ethane	93	100	80-120	8	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-EW-1	**Aqueous**	**GC12**	**N/A**	**04/15/04**	**040415S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	89	96	64-118	7	0-20	
Ethanol	100	101	73-109	1	0-23	

Calscience
Environmental
Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received:	N/A
Work Order No:	04-04-0707
Preparation:	N/A
Method:	EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-1,035	Aqueous	GC12	N/A	04/15/04	040415L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	91	87	69-117	4	0-22	
Ethanol	98	85	76-112	14	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Project: Aerojet - WNN

Date Received: 04/14/04
Work Order No: 04-04-0707
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**04/15/04**	**040415S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	118	117	70-130	0	0-30	
Acetic Acid	112	111	70-130	2	0-30	
Lactic Acid	125	124	70-130	0	0-30	
Propionic Acid	101	99	70-130	2	0-30	
Butyric Acid	96	97	70-130	0	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-0707
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-26	Aqueous	HPLC 6	N/A	04/15/04	040415L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	119	119	80-120	1	0-20	
Acetic Acid	110	110	80-120	0	0-20	
Lactic Acid	119	119	80-120	0	0-20	
Propionic Acid	102	115	80-120	12	0-20	
Butyric Acid	99	100	80-120	1	0-20	

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-04-0707

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 04 - 0707

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: GEOSYNTEC DATE: 4-14-04

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
4.3 °C IR thermometer.
_____ Ambient temperature.

Initial: WB

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: WB

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: WB

COMMENTS:

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE)

P.O. NO.:
QUOTE NO.:
LAB USE ONLY: 04-0707

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____ / ____ / ____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide
	WNN-RW-1		04/13/04	9:40	GW		X	X	X	
	WNN-EW-1		04/13/04	11:00	GW		X	X	X	
	WNN-EW-2		04/13/04	11:55	GW		X	X	X	
	WNN-MW1		04/13/04	10:41	GW		X	X	X	
	WNN-138A		04/13/04	11:36	GW		X	X	X	

Relinquished by: (Signature)	Received by: (Signature)	Date: 4/13/04	Time: 16:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 4-14-04	Time: 10:15

Calscience
Environmental
Laboratories, Inc.

May 06, 2004

Jamey Rosen
GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Subject: **Calscience Work Order No.: 04-04-1499**
Client Reference: Aerojet - WNN

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/28/2004 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Assurance Program Manual, applicable standard operating procedures, and other related documentation. The original report of any subcontracted analysis is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Stephen Nowak
Project Manager

Michael J. Crisostomo
Quality Assurance Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: RSK-175M
Units: ug/L

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	48.6	1.0	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-04-1499-5**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	20.4	1.0	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-010-614**	**N/A**	**Aqueous**	**N/A**	**05/01/04**	**040501L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Methane	ND	1.00	1		Ethylene	ND	1.00	1	
Ethane	ND	1.00	1						

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 410.4

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	5.1	5.0	1		mg/L

WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	10	5	1		mg/L

WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	5.1	5.0	1		mg/L

WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	26	5	1		mg/L

STSW-138A	**04-04-1499-5**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	10	5	1		mg/L

STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	7.7	5.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report

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Guelph, Ontario,Canada 0

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 410.4

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-38A	**04-04-1499-8**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-39A	**04-04-1499-9**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	15	5	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-39B	**04-04-1499-10**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	13	5	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-062-1,778**	**N/A**	**Aqueous**	**N/A**	**04/30/04**	**40430ODB1**

Parameter	Result	RL	DF	Qual	Units
Chemical Oxygen Demand	ND	5.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report

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Guelph, Ontario,Canada 0

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 376.2

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-04-1499-7**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 04/28/04
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N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 376.2

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-38A	**04-04-1499-8**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-39A	**04-04-1499-9**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-39B	**04-04-1499-10**	**04/27/04**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-089-1,582**	**N/A**	**Aqueous**	**N/A**	**04/29/04**	**40429SB1**

Parameter	Result	RL	DF	Qual	Units
Sulfide, Total	ND	0.050	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Analytical Report

GeoSyntec Consultants		Date Received:	04/28/04
130 Research Lane, Suite 2		Work Order No:	04-04-1499
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 405.1

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	14	1	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
STSW-38A	**04-04-1499-8**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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130 Research Lane, Suite 2		Work Order No:	04-04-1499
N1G 5G3		Preparation:	N/A
Guelph, Ontario,Canada 0		Method:	EPA 405.1

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
STSW-39A	**04-04-1499-9**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
STSW-39B	**04-04-1499-10**	**04/27/04**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Started	Date Ended	QC Batch ID
Method Blank	**099-05-054-1,485**	**N/A**	**Aqueous**	**04/28/04**	**05/03/04**	**40428BODB1**

Parameter	Result	RL	DF	Qual	Units
Biochemical Oxygen Demand	ND	1.0	1		mg/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Guelph, Ontario,Canada 0

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	91	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	90	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	89	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

GeoSyntec Consultants	Date Received: 04/28/04
130 Research Lane, Suite 2	Work Order No: 04-04-1499
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: EPA 8015B

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-04-1499-5**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	85	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	86	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-80A	**04-04-1499-7**	**04/27/04**	**Aqueous**	**N/A**	**04/30/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	88	63-147	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-006-1,049**	**N/A**	**Aqueous**	**N/A**	**04/29/04**	**040429L02**

Parameter	Result	RL	DF	Qual	Units
Ethanol	ND	0.10	1		mg/L

Surrogates:	REC (%)	Control Limits	Qual
Hexafluoro-2-propanol	92	63-147	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: HPLC/UV
Units: mg/L

Project: Aerojet - WNN

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-RW-1	**04-04-1499-1**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	89	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-1	**04-04-1499-2**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	92	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-EW-2	**04-04-1499-3**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**04-04-1499-4**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	5.9	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	15	1	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Project: Aerojet - WNN

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: HPLC/UV
Units: mg/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-138A	**04-04-1499-5**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW-166	**04-04-1499-6**	**04/27/04**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	93	80-120	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-12-016-27**	**N/A**	**Aqueous**	**N/A**	**05/05/04**	**040505L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Pyruvic Acid	ND	0.50	1		Propionic Acid	ND	1.0	1	
Acetic Acid	ND	1.0	1		Butyric Acid	ND	1.0	1	
Lactic Acid	ND	1.0	1						

Surrogates:	REC (%)	Control Limits	Qual
Dibromopropionic Acid	94	80-120	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

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Quality Control - Duplicate

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Project: Aerojet - WNN

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 405.1

Quality Control Sample ID	Matrix	Instrument	Date Started:	Date Ended:	Duplicate Batch Number
04-04-1536-1	**Aqueous**	**BOD 1**	**04/28/04**	**05/03/04**	**40428BODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Biochemical Oxygen Demand	800	780	3	0-25	

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Quality Control - Duplicate

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Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 410.4

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
04-04-1596-1	**Aqueous**	**UV 3**	**N/A**	**04/30/04**	**40430ODD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Chemical Oxygen Demand	400	400	1	0-25	

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Quality Control - Duplicate

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Project: Aerojet - WNN

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 376.2

Quality Control Sample ID	Matrix	Instrument	Date Prepared:	Date Analyzed:	Duplicate Batch Number
STSW-39B	**Aqueous**	**N/A**	**N/A**	**04/29/04**	**40429SD1**

Parameter	Sample Conc	DUP Conc	RPD	RPD CL	Qualifiers
Sulfide, Total	ND	ND	NA	0-25	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-1499
Preparation: N/A
Method: RSK-175M

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-010-614	Aqueous	GC 33	N/A	05/01/04	040501L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methane	100	95	79-109	5	0-20	
Ethane	102	98	80-120	4	0-20	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: 04/28/04
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
STSW-80A	**Aqueous**	**GC12**	**N/A**	**04/30/04**	**040429S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	95	96	64-118	2	0-20	
Ethanol	96	96	73-109	0	0-23	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-1499
Preparation: N/A
Method: EPA 8015B

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-006-1,049	Aqueous	GC12	N/A	04/29/04	040429L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Methanol	102	95	69-117	7	0-22	
Ethanol	81	87	76-112	7	0-19	

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

GeoSyntec Consultants	Date Received: 04/28/04
130 Research Lane, Suite 2	Work Order No: 04-04-1499
N1G 5G3	Preparation: N/A
Guelph, Ontario,Canada 0	Method: HPLC/UV
Project: Aerojet - WNN	

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
WNN-RW-1	**Aqueous**	**HPLC 6**	**N/A**	**05/05/04**	**040505S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	105	104	70-130	1	0-30	
Acetic Acid	116	114	70-130	2	0-30	
Lactic Acid	106	110	70-130	4	0-30	
Propionic Acid	101	100	70-130	1	0-30	
Butyric Acid	100	98	70-130	1	0-30	

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

GeoSyntec Consultants
130 Research Lane, Suite 2
N1G 5G3
Guelph, Ontario,Canada 0
Project: Aerojet - WNN

Date Received: N/A
Work Order No: 04-04-1499
Preparation: N/A
Method: HPLC/UV

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-016-27	Aqueous	HPLC 6	N/A	05/05/04	040505L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Pyruvic Acid	104	105	80-120	1	0-20	
Acetic Acid	114	114	80-120	0	0-20	
Lactic Acid	101	100	80-120	1	0-20	
Propionic Acid	98	98	80-120	1	0-20	
Butyric Acid	99	98	80-120	1	0-20	

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Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 04-04-1499

Qualifier	Definition
ND	Not detected at indicated reporting limit.

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 04 - 04 - 1499

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Geosyntec DATE: 4/28/04

TEMPERATURE – SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

_____ Chilled, cooler with temperature blank provided.
_____ Chilled, cooler without temperature blank.
_____ Chilled and placed in cooler with wet ice.
_____ Ambient and placed in cooler with wet ice.
_____ Ambient temperature.
_____ °C Temperature blank.

LABORATORY (Other than Calscience Courier):

_____ °C Temperature blank.
_____ °C IR thermometer.
✓ Ambient temperature.

Initial: BT

CUSTODY SEAL INTACT:

Sample(s): _____ Cooler: _____ No (Not Intact) : _____ Not Applicable (N/A): ✓

Initial: BT

SAMPLE CONDITION:

	Yes	No	N/A
Chain-Of-Custody document(s) received with samples	✓		
Sample container label(s) consistent with custody papers	✓		
Sample container(s) intact and good condition	✓		
Correct containers for analyses requested	✓		
Proper preservation noted on sample label(s)	✓		
VOA vial(s) free of headspace.	✓		
Tedlar bag(s) free of condensation			✓

Initial: BT

COMMENTS:

Sample STSW-80A: Did not ~~recieve~~ ricevre BOD and COD containers.

Calscience Environmental Laboratories, Inc.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841-1432
TEL: (714) 895-5494 . FAX: (714) 894-7501

CHAIN OF CUSTODY RECORD

DATE:

PAGE: 1 OF 1

LABORATORY CLIENT: GeoSyntec Consultants
ADDRESS: 130 Research Lane, Suite 2
CITY: Guelph, Ontario N1G 5G3
TEL: 519-822-2230 | FAX: | E-MAIL

CLIENT PROJECT NAME / NUMBER: Aerojet-WNN
PROJECT CONTACT: Jamey Rosen
SAMPLER(S): (SIGNATURE) Scott Fulton
P.O. NO.:
QUOTE NO.:
LAB USE ONLY 04-1499

TURNAROUND TIME
☐ SAME DAY ☐ 24 HR ☐ 48HR ☐ 72 HR ☐ 5 DAYS ☒ 10 DAYS

SPECIAL REQUIREMENTS (ADDITIONAL COSTS MAY APPLY)
☐ RWQCB REPORTING ☐ ARCHIVE SAMPLES UNTIL ____/____/____

SPECIAL INSTRUCTIONS

REQUESTED ANALYSIS

LAB USE ONLY	SAMPLE ID	LOCATION/ DESCRIPTION	SAMPLING DATE	SAMPLING TIME	Matrix	#Cont	Ethanol	Dissolved Hydrocarbon Gases	Volatile Fatty Acids	Sulfide	BOD	COD
1	WNN-RW-1		04/27/04	10:05	GW		X	X	X	X	X	X
2	WNN-EW-1		04/27/04	8:55	GW		X	X	X	X	X	X
3	WNN-EW-2		04/27/04	10:40	GW		X	X	X	X	X	X
4	WNN-MW1		04/27/04	13:08	GW		X	X	X	X	X	X
5	STSW-138A		04/27/04	13:59	GW		X	X	X			X
6	STSW-166		04/27/04	8:12	GW		X	X	X	X	X	X
7	STSW-80A		04/27/04	9:26	GW					X	X	X
8	STSW-38A		04/27/04	10:36	GW					X	X	X
9	STSW-39A		04/27/04	12:17	GW					X	X	X
10	STSW-39B		04/27/04	11:32	GW					X	X	X

Relinquished by: (Signature) Scott Fulton	Received by: (Signature) Fed Ex	Date: 4/27/04	Time: 17:00
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date: 4/28/04	Time: 1000

Stephen Nowak

From: SFelton@GeoSyntec.com
Sent: Wednesday, April 28, 2004 1:05 PM
To: Stephen Nowak
Subject: RE: Aerojet WNN samples

That was my mistake. There should ethanol but no BOD or COD.

D. Scott Felton, E.I.T.
Engineer
GeoSyntec Consultants
475 14th Street, Suite 450
Oakland, California 94612
Phone: 510-836-3034
Fax: 510-836-3036

-----Original Message-----
From: Stephen Nowak [mailto:SNowak@calscience.com]
Sent: Wednesday, April 28, 2004 12:39 PM
To: Scott Felton
Subject: Aerojet WNN samples

Hi Scott,

We rec'd your samples today and had one discrepancy with the COC.

For sample STSW-80A the COC lists analysis for Sulfide, BOD, and COD.
We did not receive any bottles for the BOD and COD.
However, we did receive bottles for ethanol analysis for this sample.

Let me know if anything needs to be changed to the COC for this sample.

Thanks- Steve

Stephen J. Nowak Jr.
Project Manager
Calscience Environmental
Laboratories, Inc.
7440 Lincoln Way
Garden Grove, CA 92841-1427
Tel.: 714-895-5494
Fax : 714-894-7501
snowak@calscience.com

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Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation		Date Received:	12/22/06
PO Box 13222, MS-5519		Work Order No:	06-12-1442
Sacramento, CA 95813-6000		Preparation:	N/A
		Method:	EPA 314.0

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**06-12-1442-1**	**12/14/06**	**Aqueous**	**N/A**	**01/02/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	6.8	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**06-12-1442-2**	**12/14/06**	**Aqueous**	**N/A**	**01/02/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	420	40	10		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-528**	**N/A**	**Aqueous**	**N/A**	**01/03/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 12/22/06
Work Order No: 06-12-1442
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**06-12-1442-1**	**12/14/06**	**Aqueous**	**12/22/06**	**12/22/06**	**061222L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	6.0	0.5	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	115	77-137		Dibromofluoromethane	114	75-141	
Toluene-d8	104	87-111		1,4-Bromofluorobenzene	85	71-107	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**06-12-1442-2**	**12/14/06**	**Aqueous**	**12/22/06**	**12/22/06**	**061222L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	4.4	0.5	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	115	77-137		Dibromofluoromethane	111	75-141	
Toluene-d8	103	87-111		1,4-Bromofluorobenzene	87	71-107	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/20/07
Work Order No: 07-06-1505
Preparation: N/A
Method: EPA 314.0

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 103C	**07-06-1505-1**	**06/18/07**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**07-06-1505-2**	**06/18/07**	**Aqueous**	**IC 6**	**N/A**	**06/23/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	730	40	10		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 126C	**07-06-1505-3**	**06/18/07**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-613**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation		Date Received:	06/20/07
PO Box 13222, MS-5519		Work Order No:	07-06-1505
Sacramento, CA 95813-6000		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 103C	**07-06-1505-1**	**06/18/07**	**Aqueous**	**GC/MS L**	**06/22/07**	**06/23/07**	**070622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	106	73-157		Dibromofluoromethane	110	82-142	
Toluene-d8	100	82-112		1,4-Bromofluorobenzene	87	75-105	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**07-06-1505-2**	**06/18/07**	**Aqueous**	**GC/MS L**	**06/25/07**	**06/25/07**	**070625L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	5.3	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	113	73-157		Dibromofluoromethane	108	82-142	
Toluene-d8	100	82-112		1,4-Bromofluorobenzene	93	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation	Date Received:	11/09/06
PO Box 13222, MS-5519	Work Order No:	06-11-0570
Sacramento, CA 95813-6000	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 138B	**06-11-0570-1**	**11/06/06**	**Aqueous**	**11/10/06**	**11/10/06**	**061110L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	109	77-137		Dibromofluoromethane	108	75-141	
Toluene-d8	89	87-111		1,4-Bromofluorobenzene	94	71-107	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 138A	**06-11-0570-2**	**11/06/06**	**Aqueous**	**11/10/06**	**11/10/06**	**061110L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	4.2	0.5	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	109	77-137		Dibromofluoromethane	110	75-141	
Toluene-d8	92	87-111		1,4-Bromofluorobenzene	93	71-107	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 11/09/06
Work Order No: 06-11-0570

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix
STSW 138B	**06-11-0570-1**	**11/06/06**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	55	4	1		ug/L	N/A	11/11/06	EPA 314.0

Client Sample Number	Lab Sample Number	Date Collected	Matrix
STSW 138A	**06-11-0570-2**	**11/06/06**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	2600	200	50		ug/L	N/A	11/11/06	EPA 314.0

Client Sample Number	Lab Sample Number	Date Collected	Matrix
STSW 38C	**06-11-0570-3**	**11/06/06**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	14	4	1		ug/L	N/A	11/11/06	EPA 314.0

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank		**N/A**	**Aqueous**

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Perchlorate	ND	4.0	1		ug/L	N/A	11/11/06	EPA 314.0

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/20/07
Work Order No: 07-06-1503
Preparation: N/A
Method: EPA 314.0

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 138C	**07-06-1503-1**	**06/15/07**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 138B	**07-06-1503-2**	**06/15/07**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	48	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 138A	**07-06-1503-3**	**06/15/07**	**Aqueous**	**IC 6**	**N/A**	**06/23/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	2700	200	50		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-613**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**06/22/07**	**070622L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/20/07
Work Order No: 07-06-1503
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 138A	**07-06-1503-3**	**06/15/07**	**Aqueous**	**GC/MS L**	**06/21/07**	**06/22/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	8.3	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	111	73-157		Dibromofluoromethane	112	82-142	
Toluene-d8	100	82-112		1,4-Bromofluorobenzene	88	75-105	

Method Blank	099-10-025-337	N/A	Aqueous	GC/MS L	06/21/07	06/22/07	070621L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	108	73-157		Dibromofluoromethane	107	82-142	
Toluene-d8	101	82-112		1,4-Bromofluorobenzene	90	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation		Date Received:	12/22/06
PO Box 13222, MS-5519		Work Order No:	06-12-1442
Sacramento, CA 95813-6000		Preparation:	N/A
		Method:	EPA 314.0

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**06-12-1442-1**	**12/14/06**	**Aqueous**	**N/A**	**01/02/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	6.8	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**06-12-1442-2**	**12/14/06**	**Aqueous**	**N/A**	**01/02/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	420	40	10		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-528**	**N/A**	**Aqueous**	**N/A**	**01/03/07**	**070102L03**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation	Date Received:	12/22/06
PO Box 13222, MS-5519	Work Order No:	06-12-1442
Sacramento, CA 95813-6000	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	ug/L

Project: IRCTS/42060 QT4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW1	**06-12-1442-1**	**12/14/06**	**Aqueous**	**12/22/06**	**12/22/06**	**061222L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	6.0	0.5	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	115	77-137		Dibromofluoromethane	114	75-141	
Toluene-d8	104	87-111		1,4-Bromofluorobenzene	85	71-107	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Date Prepared	Date Analyzed	QC Batch ID
STSW 166	**06-12-1442-2**	**12/14/06**	**Aqueous**	**12/22/06**	**12/22/06**	**061222L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	4.4	0.5	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	115	77-137		Dibromofluoromethane	111	75-141	
Toluene-d8	103	87-111		1,4-Bromofluorobenzene	87	71-107	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/15/07
Work Order No: 07-06-1143
Preparation: N/A
Method: EPA 314.0

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 100C	**07-06-1143-1**	**06/14/07**	**Aqueous**	**IC 6**	**N/A**	**06/15/07**	**070615L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 100B	**07-06-1143-2**	**06/14/07**	**Aqueous**	**IC 6**	**N/A**	**06/15/07**	**070615L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	14	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 100A	**07-06-1143-3**	**06/14/07**	**Aqueous**	**IC 6**	**N/A**	**06/15/07**	**070615L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	41	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**07-06-1143-4**	**06/14/07**	**Aqueous**	**IC 6**	**N/A**	**06/15/07**	**070615L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	40	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-604**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**06/15/07**	**070615L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/15/07
Work Order No: 07-06-1143
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 100A	**07-06-1143-3**	**06/14/07**	**Aqueous**	**GC/MS L**	**06/20/07**	**06/20/07**	**070620L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	0.73	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	35	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	113	73-157		Dibromofluoromethane	111	82-142	
Toluene-d8	101	82-112		1,4-Bromofluorobenzene	92	75-105	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
WNN-MW-1	**07-06-1143-4**	**06/14/07**	**Aqueous**	**GC/MS CC**	**06/20/07**	**06/21/07**	**070620L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	8.7	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	103	73-157		Dibromofluoromethane	101	82-142	
Toluene-d8	100	82-112		1,4-Bromofluorobenzene	96	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/20/07
Work Order No: 07-06-1502
Preparation: N/A
Method: EPA 314.0

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 126B	**07-06-1502-1**	**06/19/07**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 126A	**07-06-1502-2**	**06/19/07**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 38C	**07-06-1502-3**	**06/19/07**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	18	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 38B	**07-06-1502-4**	**06/19/07**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 38A	**07-06-1502-5**	**06/19/07**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
Method Blank	**099-05-203-611**	**N/A**	**Aqueous**	**IC 6**	**N/A**	**06/21/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation		Date Received:	06/20/07
PO Box 13222, MS-5519		Work Order No:	07-06-1502
Sacramento, CA 95813-6000		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 38A	**07-06-1502-5**	**06/19/07**	**Aqueous**	**GC/MS L**	**06/21/07**	**06/22/07**	**070621L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	45	1.0	2	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	112	73-157		Dibromofluoromethane	110	82-142	
Toluene-d8	102	82-112		1,4-Bromofluorobenzene	89	75-105	

Method Blank	099-10-025-337	N/A	Aqueous	GC/MS L	06/21/07	06/22/07	070621L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	108	73-157		Dibromofluoromethane	107	82-142	
Toluene-d8	101	82-112		1,4-Bromofluorobenzene	90	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/08/07
Work Order No: 07-06-0617
Preparation: N/A
Method: EPA 314.0

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39C	**07-06-0617-1**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	740	40	10		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39B	**07-06-0617-2**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	890	80	20		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39A	**07-06-0617-3**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	3700	800	200		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 123C	**07-06-0617-4**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 123A	**07-06-0617-5**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 123B	**07-06-0617-6**	**06/06/07**	**Aqueous**	**IC 6**	**N/A**	**06/11/07**	**070611L01**

Parameter	Result	RL	DF	Qual	Units
Perchlorate	ND	4.0	1		ug/L

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation		Date Received:	06/08/07
PO Box 13222, MS-5519		Work Order No:	07-06-0617
Sacramento, CA 95813-6000		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	ug/L
Project: IRCTS / 42060 QT2			Page 1 of 4

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39C	**07-06-0617-1**	**06/06/07**	**Aqueous**	**GC/MS L**	**06/13/07**	**06/13/07**	**070613L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	ND	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	105	73-157		Dibromofluoromethane	106	82-142	
Toluene-d8	101	82-112		1,4-Bromofluorobenzene	91	75-105	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39B	**07-06-0617-2**	**06/06/07**	**Aqueous**	**GC/MS L**	**06/13/07**	**06/13/07**	**070613L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	2.8	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	106	73-157		Dibromofluoromethane	105	82-142	
Toluene-d8	102	82-112		1,4-Bromofluorobenzene	94	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

Calscience Environmental Laboratories, Inc.

Analytical Report

Aerojet Environmental Remediation
PO Box 13222, MS-5519
Sacramento, CA 95813-6000

Date Received: 06/08/07
Work Order No: 07-06-0617
Preparation: EPA 5030B
Method: EPA 8260B
Units: ug/L

Project: IRCTS / 42060 QT2

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 39A	**07-06-0617-3**	**06/06/07**	**Aqueous**	**GC/MS L**	**06/13/07**	**06/13/07**	**070613L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	23	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	30	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	112	73-157		Dibromofluoromethane	106	82-142	
Toluene-d8	102	82-112		1,4-Bromofluorobenzene	94	75-105	

Client Sample Number	Lab Sample Number	Date Collected	Matrix	Instrument	Date Prepared	Date Analyzed	QC Batch ID
STSW 123C	**07-06-0617-4**	**06/06/07**	**Aqueous**	**GC/MS L**	**06/13/07**	**06/13/07**	**070613L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Bromodichloromethane	ND	0.50	1		c-1,2-Dichloroethene	ND	0.50	1	
Bromoform	ND	0.50	1		t-1,2-Dichloroethene	ND	0.50	1	
Bromomethane	ND	0.50	1		1,2-Dichloropropane	ND	0.50	1	
Carbon Tetrachloride	ND	0.50	1		c-1,3-Dichloropropene	ND	0.50	1	
Chlorobenzene	ND	0.50	1		t-1,3-Dichloropropene	ND	0.50	1	
Chloroethane	ND	0.50	1		Methylene Chloride	ND	0.50	1	
Chloroform	ND	0.50	1		1,1,1,2-Tetrachloroethane	ND	0.50	1	
Dibromochloromethane	ND	0.50	1		1,1,2,2-Tetrachloroethane	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tetrachloroethene	ND	0.50	1	
1,2-Dichlorobenzene	ND	0.50	1		1,1,1-Trichloroethane	ND	0.50	1	
1,3-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.50	1	
1,4-Dichlorobenzene	ND	0.50	1		1,1,2-Trichloroethane	ND	0.50	1	
Dichlorodifluoromethane	ND	0.50	1		Trichloroethene	1.2	0.50	1	
1,1-Dichloroethane	ND	0.50	1		Trichlorofluoromethane	ND	0.50	1	
1,2-Dichloroethane	ND	0.50	1		Vinyl Chloride	ND	0.50	1	
1,1-Dichloroethene	ND	0.50	1						

Surrogates:	REC (%)	Control Limits	Qual	Surrogates:	REC (%)	Control Limits	Qual
1,2-Dichloroethane-d4	110	73-157		Dibromofluoromethane	108	82-142	
Toluene-d8	103	82-112		1,4-Bromofluorobenzene	93	75-105	

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers

APPENDIX D

STATISTICAL ANALYSIS OF ORP AND PERCHLORATE DATA

APPENDIX D
STATISTICAL ANALYSIS OF ORP AND PERCHLOTATE DATA

1. INTRODUCTION

This appendix presents the results of statistical analysis of key monitoring parameters (ORP and perchlorate concentrations) to assess the changes in these parameters resulting from the addition of electron donor to the subsurface. Analysis of ORP data is presented in Section 2 and analysis of perchlorate data is presented in Section 3.

2. EVALUATION OF ORP DATA

A statistical evaluation of ORP data collected from two key monitoring wells along the alignment of the biobarrier was conducted: (1) MW-1; and (2) STSW-138A. These wells are located along the alignment of the biobarrier and were selected to represent areas that have been impacted by the amendment of electron donor.

Data from two different time periods were evaluated for the statistical analysis to represent before and during injection of electron donor. The specific periods of time for both MW-1 and STSW-138A were: (1) day -34 to day -6 (before electron donor addition); and (2) day 56 to day 232 (during electron donor addition). The specific data used in the analysis are show in Tables D-1 and D-2.

The mean and standard deviation of the ORP values from each monitoring well in each of the two time periods were calculated and are presented in Tables D-1 and D-2. In addition, a one-tailed Student's t-test was conducted at a 5% level of significance and assuming equal sample variances. The null hypothesis of the t-test is that the mean ORP value for the time period following the amendment with electron donor was greater than or equal to the mean ORP value for the time period preceding the amendment, or the mean baseline ORP. Tables D-1 and D-2 show the p-values from the t-tests for ORP data from MW-1 and STDW-138A, respectively. The p-value is the probability of obtaining a test statistic at least as extreme as the one observed. If the p-value is less than the specified alpha level, i.e., 0.05, then there is sufficient evidence to reject the null hypothesis.

The p-values for the comparison of means from the period of time before amendment and after amendment for MW-1 and STSW-138A are 1.56×10^{-10} and 6.5×10^{-6}, respectively. As these values are significantly lower than 0.05, the null hypothesis is rejected and we can conclude that the mean ORP after amendment is statistically lower than that at the baseline. Therefore, the results of the t-test confirm that ORP concentrations did indeed decrease after amendment.

The statistical analysis of ORP data shows a high level of confidence that the injection of electron donor in the biobarrier resulted in significant reductions in mean ORP values for MW-1 and STSW-138A that are indicative of enhanced biological activity.

3. EVALUATION OF PERCHLORATE DATA

A statistical evaluation of perchlorate data collected from two key monitoring wells along the alignment of the biobarrier was conducted: (1) MW-1; and (2) STSW-138A. These wells are located along the alignment of the biobarrier and were selected to represent areas that have been impacted by the amendment of electron donor.

Data from different time periods were evaluated for the statistical analysis to represent before and during operation of the demonstration test. The tracer test demonstrated that the travel time from the injection well to MW-1 was in the order of 9 days, so data from the period up to 8 days after the initiation of the addition of electron donor was used to represent un-impacted or baseline groundwater. Stable post amendment concentrations were achieved by approximately Day 29. The specific periods of time for MW-1 were: (1) Day -34 to Day 8 (before electron donor addition); and (2) Day 29 to Day 232 (during electron donor addition).

The tracer test demonstrated that the travel time from the injection well to STSW-138A was in the order of 28 days, so data from up to 21 days after the initiation of the addition of electron donor was used to represent un-impacted or baseline groundwater. The specific periods of time for MW-1 were: (1) Day -34 to Day 21 (before electron donor addition); and (2) Day 85 to Day 232 (during electron donor addition). An analysis of the later portion of the post amendment period of Day 127 to Day 232 (a period of 105 days after the system shut down between Day 104 and Day 120) was also evaluated.

In this analysis, a value of one half the detection limit (2.0 µg/L) substituted for samples reported by the lab as non-detect with a detection limit of 4.0 µg/L. Also, since the non-detect frequency for samples collected post-amendment was extremely high (86%-100%), the t-test could not be conducted on these data. Instead, the means and percentiles of perchlorate results for the pre- and post-amendment time periods were calculated and compared empirically.

The mean, standard deviation and 95th percentile of the perchlorate concentrations from each of the time periods for each of the monitoring wells were calculated and are presented in Tables D-3, D-4 and D-5. The average concentrations and 95th percentile for perchlorate concentrations are as follows:

	MW-1 from Day 29 to 232	STSW-138A from Day 85 to 232	STSW-138A from Day 127 to 232
Average Concentration of Perchlorate (µg/L)	2.6	2.9	2.0
95th Percentile Concentration of Perchlorate (µg/L)	3.6	5.9	2.0

The average perchlorate concentrations measured in: (1) MW-1 from day 29 to the end of amendment injection period (2.6 µg/L); and (2) STSW-138A from day 85 to the end of amendment injection period (2.9 µg/L) were all less than 4.0 µg/L.

The groundwater recirculation and electron donor amendment system was shut off from day 104 to day 120. During this period of time, the concentration of perchlorate in monitoring well STSW-138A increased up to 14 µg/L at day 116 but dropped back down to less than 4.0 µg/L on day 127 and remained less than 4.0 µg/L to the end of amendment injection period at day 232. It is likely that when the recirculation system was shut off at day 104, un-amended groundwater from upgradient of STSW-138A began to flow into the monitoring well and resulted in the short-term increase in perchlorate concentrations in this monitoring well. After this period of time, the concentration of perchlorate in the monitoring well remained non-detect.

The 95th percentile perchlorate concentrations measured in: (1) MW-1 from day 29 to the end of amendment injection period (3.6 µg/L); and (2) STSW-138A from day 127 to the end of amendment injection period (2.0 µg/L) were all less than 4.0 µg/L.

TABLE D-1: Statistical Analysis of ORP Data from Monitoring Well MW-1
Active Perchlorate Bioremediation Demonstration

Time Period	Monitoring Well	Day	ORP	Mean	Standard Deviation	p-value from t-test
Before Amendment	MW-1	-34	-48			
	MW-1	-26	-33			
	MW-1	-20	-20			
	MW-1	-18	20			
	MW-1	-13	-7			
	MW-1	-11	-29			
	MW-1	-6	-26	-20.43	21.7	
After Amendment	MW-1	56	-109			
	MW-1	64	-124			
	MW-1	71	-114			
	MW-1	78	-100			
	MW-1	85	-98			
	MW-1	92	-88			
	MW-1	99	-140			
	MW-1	120	-132			
	MW-1	127	-155			
	MW-1	141	-166			
	MW-1	148	-162			
	MW-1	155	-173			
	MW-1	162	-174			
	MW-1	169	-177			
	MW-1	177	-167			
	MW-1	183	-180			
	MW-1	190	-153			
	MW-1	197	-228			
	MW-1	205	-205			
	MW-1	211	-167			
	MW-1	218	-156			
	MW-1	225	-150			
	MW-1	232	-275	-156	43.0	1.56E-10

Notes: ORP - Oxidation / Reduction Potential

TABLE D-2: Statistical Analysis of ORP Data from Monitoring Well STSW-138A
Active Perchlorate Bioremediation Demonstration

Time Period	Monitoring Well	Day	ORP	Mean	Standard Deviation	p-value from t-test
Before Amendment	STSW-138A	-34	38			
	STSW-138A	-25	37			
	STSW-138A	-20	44			
	STSW-138A	-18	153			
	STSW-138A	-13	85			
	STSW-138A	-11	19			
	STSW-138A	-6	105	68.71	47.8	
After Amendment	STSW-138A	56	-79			
	STSW-138A	64	-103			
	STSW-138A	71	-94			
	STSW-138A	78	-58			
	STSW-138A	85	-94			
	STSW-138A	92	-72			
	STSW-138A	99	-105			
	STSW-138A	120	-108			
	STSW-138A	127	-118			
	STSW-138A	141	-121			
	STSW-138A	148	-122			
	STSW-138A	155	-137			
	STSW-138A	162	-126			
	STSW-138A	169	-135			
	STSW-138A	177	-135			
	STSW-138A	183	-146			
	STSW-138A	190	-166			
	STSW-138A	197	-114			
	STSW-138A	205	-111			
	STSW-138A	211	-92			
	STSW-138A	218	-93			
	STSW-138A	225	-98			
	STSW-138A	232	-225	-115	34.4	6.47E-06

Notes: ORP - Oxidation / Reduction Potential

TABLE D-3: Statistical Analysis of Perchlorate Data from Monitoring Well MW-1
Active Perchlorate Bioremediation Demonstration

Time Period	Monitoring Well	Day	Perchlorate (ug/L)	Perchlorate[1] (ug/L)	Mean	95th Percentile	Standard Deviation
Before Amendment	MW-1	-254	1,600	1,600			
	MW-1	-34	1,400	1,400			
	MW-1	0	2,300	2,300			
	MW-1	3	2,200	2,200			
	MW-1	8	2,100	2,100	1,920	2,280	396
After Amendment	MW-1	29	<4.0	2.0			
	MW-1	37	<4.0	2.0			
	MW-1	43	<4.0	2.0			
	MW-1	51	<4.0	2.0			
	MW-1	56	<4.0	2.0			
	MW-1	64	<4.0	2.0			
	MW-1	71	<4.0	2.0			
	MW-1	78	<4.0	2.0			
	MW-1	85	16.0	16.0			
	MW-1	92	<4.0	2.0			
	MW-1	99	<4.0	2.0			
	MW-1	116	<4.0	2.0			
	MW-1	120	<4.0	2.0			
	MW-1	127	<4.0	2.0			
	MW-1	134	<4.0	2.0			
	MW-1	141	<4.0	2.0			
	MW-1	148	<4.0	2.0			
	MW-1	155	<4.0	2.0			
	MW-1	162	<4.0	2.0			
	MW-1	169	<4.0	2.0			
	MW-1	176	4.7	4.7			
	MW-1	183	<4.0	2.0			
	MW-1	190	<4.0	2.0			
	MW-1	197	<4.0	2.0			
	MW-1	205	<4.0	2.0			
	MW-1	211	<4.0	2.0			
	MW-1	218	<4.0	2.0			
	MW-1	225	<4.0	2.0			
	MW-1	232	<4.0	2.0	2.6	3.6	2.6

Notes: [1] using a value of 2.0 ug/L for values reported as non-detect (<4.0)

TABLE D-4: Statistical Analysis of Perchlorate Data from Monitoring Well STSW-138A
Active Perchlorate Bioremediation Demonstration

Time Period	Monitoring Well	Day	Perchlorate (ug/L)	Perchlorate[1] (ug/L)	Mean	95th Percentile	Standard Deviation
Before Amendment	STSW-138A	-262	2,100	2,100			
	STSW-138A	-110	2,200	2,200			
	STSW-138A	-34	2,600	2,600			
	STSW-138A	0	2,200	2,200			
	STSW-138A	3	2,100	2,100			
	STSW-138A	8	2,200	2,200			
	STSW-138A	14	2,400	2,400			
	STSW-138A	21	1,900	1,900	2,213	2,530	210
After Amendment	STSW-138A	85	<4.0	2.0			
	STSW-138A	92	<4.0	2.0			
	STSW-138A	99	5.9	5.9			
	STSW-138A	116	14.0	14.0			
	STSW-138A	120	5.8	5.8			
	STSW-138A	127	<4.0	2.0			
	STSW-138A	134	<4.0	2.0			
	STSW-138A	141	<4.0	2.0			
	STSW-138A	148	<4.0	2.0			
	STSW-138A	155	<4.0	2.0			
	STSW-138A	162	<4.0	2.0			
	STSW-138A	169	<4.0	2.0			
	STSW-138A	176	<4.0	2.0			
	STSW-138A	183	<4.0	2.0			
	STSW-138A	190	<4.0	2.0			
	STSW-138A	197	<4.0	2.0			
	STSW-138A	205	<4.0	2.0			
	STSW-138A	211	<4.0	2.0			
	STSW-138A	218	<4.0	2.0			
	STSW-138A	225	<4.0	2.0			
	STSW-138A	232	<4.0	2.0	2.9	5.9	2.8

Notes: [1] using a value of 2.0 ug/L for values reported as non-detect (<4.0)

TABLE D-5: Statistical Analysis of Perchlorate Data from Monitoring Well STSW-138A
Active Perchlorate Bioremediation Demonstration

Time Period	Monitoring Well	Day	Perchlorate (ug/L)	Perchlorate[1] (ug/L)	Mean	95th Percentile	Standard Deviation
Before Amendment	STSW-138A	-262	2,100	2,100			
	STSW-138A	-110	2,200	2,200			
	STSW-138A	-34	2,600	2,600			
	STSW-138A	0	2,200	2,200			
	STSW-138A	3	2,100	2,100			
	STSW-138A	8	2,200	2,200			
	STSW-138A	14	2,400	2,400			
	STSW-138A	21	1,900	1,900	2,213	2,530	210
After Amendment	STSW-138A	127	<4.0	2.0			
	STSW-138A	134	<4.0	2.0			
	STSW-138A	141	<4.0	2.0			
	STSW-138A	148	<4.0	2.0			
	STSW-138A	155	<4.0	2.0			
	STSW-138A	162	<4.0	2.0			
	STSW-138A	169	<4.0	2.0			
	STSW-138A	176	<4.0	2.0			
	STSW-138A	183	<4.0	2.0			
	STSW-138A	190	<4.0	2.0			
	STSW-138A	197	<4.0	2.0			
	STSW-138A	205	<4.0	2.0			
	STSW-138A	211	<4.0	2.0			
	STSW-138A	218	<4.0	2.0			
	STSW-138A	225	<4.0	2.0			
	STSW-138A	232	<4.0	2.0	2.0	2.0	0.0

Notes: [1] using a value of 2.0 ug/L for values reported as non-detect (<4.0)