Diagnostic Engineering Inc.

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March 8, 1993

Ms. Betsy Goulart
Property Manager
COMPASS MANAGEMENT AND LEASING
450 N Street, Suite 1200
Sacramento, California 95814

RE: BASELINE AIR AND WATER SAMPLING
CAPITOL SQUARE BUILDING
450 N STREET
SACRAMENTO, CALIFORNIA
DEI PROJECT NO. D2900-1601

Ms. Goulart:

At the request of Compass Management and Leasing, Diagnostic Environmental Inc. (DEI) performed a Baseline Air and Water Sampling on January 28 and 29, 1993, at the newly constructed Capitol Square building located at 450 N Street in the Sacramento, California. The purpose of this sampling was to document baseline levels of select airborne substances in the new facility. Water samples were also collected and tested for lead.

The following report represents the results of the baseline air and water sampling.

I. PROJECT BACKGROUND

As part of the commissioning process for new building operations, Compass Management and Leasing contracted with DEI to conduct a commissioning study of the indoor air quality prior to occupation of the new building. New finishes, new equipment and new processes in a building will emit a large variety of substances into the air. In preparation for this project, DEI has reviewed two Material Safety Data Sheets (MSDS) provided to DEI by Compass Management and Leasing for some of the materials, equipment and finishes which have been installed in the building. The information provided in the MSDS's, as well as DEI's experience in other new buildings, led DEI to recommend the types of air and water samples collected.

At the time of the field visit and sampling, the 450 N Street Building was not yet occupied. Major finishes and work stations were in place on most floors. DEI observed final finishing activities, paint touch-ups, and installation of work stations on limited floors of the building taking place during the project area visit. According to Ms. Betsy Goulart, Property Manager for Compass Management and Leasing, a "bake-out" to facilitate off-gassing of the new finishes was completed during the week prior to DEI's field visit. At the time of the sampling, building ventilation was operating on the economizer cycle with maximum fresh air intake.

II. SAMPLING PLAN AND METHODOLOGY

Three types of sampling were performed in the Capitol Square building located at 450 N Street in Sacramento. Air samples were collected for analysis by two distinct analytical techniques, and a lead in water analysis was also performed on water collected from select drinking fountains.

Air Samples

Air samples were collected on four distinct floors, with each sample collected in a different geographic quadrant. The following table outlines the specific sampling locations used for this project:

Floor	Sample Locations (Geographic Quadrant)
Floor 3	North
Floor 7	South
Floor 14	East
Floor 18	West

One set of air samples was collected at the specified locations using 6-liter stainless steel Summa canisters. These evacuated canisters are fitted with a flow device set to fill the canister with ambient air over a four hour period when opened. Samples were analyzed using EPA Method TO-14, a gas chromatography/mass spectroscopy scan for 39 distinct volatile and semi-volatile organic compounds.

A second set of air samples was collected using specially prepared cassettes attached to a low flow air sampling pump. Approximately 100 liters of air were collected for each sample at a rate of 1.2 liters per minute. These samples were analyzed using EPA Method TO-11, which uses high pressure liquid chromatography to identify formaldehyde and related compounds Sample cassettes were stored in a chilled field ice chest prior to sampling and following sampling until relinquished to the analyzing laboratory.

All air samples collected were labeled with sample number, sample location, and date and time of collection. Additionally, the TO-11 samples were labeled with sampling flow rates.

Water Samples

Water samples were collected on four distinct floors. Each floor has two drinking fountains in identical placement on either the east or west half of the building. Water from each selected drinking fountain was collected of the first draw in the morning, after sitting undisturbed overnight. All samples collected were labeled with sample number, sample location, date and time of collection. The following table summarizes the specific sampling locations for lead in water testing:

Floor	Sample Locations (Geographic Quadrant)
Floor 4	East
Floor 8	West
Floor 16	East
Floor 20	West

Lead in water analysis was performed using a graphite furnace according to EPA Method 7421. This analytical method provides a high level of sensitivity for detecting low levels of lead in water.

III. AIR SAMPLE RESULTS

Laboratory analysis of the air samples was performed by Air Toxics Ltd. of Rancho Cordova, California. Samples are numbered according to the floor and quadrant in which the sample was collected. The samples were delivered to Air Toxics Ltd. on January 29, 1993. A chain-of-custody was maintained with the samples at all times until relinquished to the analyzing laboratory.

EPA Method TO-11

The following represents the results of the EPA Method TO-11 analysis, which utilizes high pressure liquid chromatography to identify formaldehyde and related compounds. N/D denotes none detected. The detection limit for this analysis is 0.5 ug, which equals 0.5×10^{-6} grams.

Sample	Formaldehyde
3N-1	N/D
7S-1	N/D
14E-1	N/D
18W-1	N/D

EPA Method TO-14

The following represents the results of the EPA Method TO-14 analysis, which runs a gas chromatography/mass spectroscopy full scan for 39 different volatile and semi-volatile organic compounds. Compounds listed, measured in parts per million by volume (ppmv), are those identified in detectable levels during the scan. The detection limit for each component in this analysis is .0008 ppmv.

Compound	Cal-OSHA PEL (ppm)	Sample Numbers and Results (ppmv) 3N-2	7S-2	14E-2	18W-2
Freon 12	1,000	0.0013	0.0025	N/D	0.002
Freon 11	1,000	0.001	0.0012	0.0013	0.0024
Methylene Chloride	50	N/D	0.0044	N/D	N/D
Benzene	1.0	0.0018	0.0019	0.002	0.0022
Toluene	100	0.0048	0.0061	0.0059	0.0066
Ethyl Benzene	100	0.0014	0.0015	0.0015	0.002
m,p-Xylene	100	0.0041	0.0052	0.0047	0.0063
o-Xylene	100	0.0014	0.002	0.0017	0.0023
1,3,5-Trimethylbenzene	25	0.00091	0.0011	0.0011	0.002
1,2,4-Trimethylbenzene	25	0.0026	0.003	0.0031	0.0043

Cal-OSHA permissible exposure limits (PEL) were obtained from the General Industry Safety Orders, Title 8, California Code of Regulations, Section 5155. Complete laboratory results are attached.

IV. WATER SAMPLE RESULTS

Lead in water analysis was performed by Analytical Technologies, Inc. of Renton, Washington. Samples are numbered according to the floor and quadrant in which the sample was collected. A chain-of-custody was maintained with the samples at all times until relinquished to the analyzing laboratory.

Samples were analyzed by graphite furnace according to EPA Method 7421. The following table summarizes the results of this analysis:

Sample	Lead (mg/L)
4E-1	0.0060
8W-1	0.0062
16E-1	<0.0030
20W-1	0.0040

Complete laboratory results are attached.

V. CONCLUSIONS

Air Samples

Ambient air samples collected on the day of the site visit were well below the allowable exposure levels established for the volatile and semi-volatile organic compounds sampled for as set forth by the federal and state governments. The permissible exposure level established by Cal-OSHA for most organic compounds is in the parts per million (ppm) range, while the sample results indicate concentrations at the time of the field investigation in the range of parts per billion (ppb). The low levels of organic compounds identified during the air sampling are probably the result of off-gassing from the various new finishes in the building. The bake-out conducted during the week previous to DEI's site visit likely reduced the emission levels from these finishes significantly.

Water Samples

Water samples collected for lead analysis by EPA Method 7421 were found to contain less than the allowable level of 0.05 milligrams per liter (mg/L) of lead, as set forth in the Safe Drinking Water Act of California. The highest level encountered during sampling was 0.0062 mg/L, well below the limit set forth by the State of California. Lead identified in drinking fountain water is usually the result of lead solder joints, which is not used in most new drinking fountains and associated piping.

VI. RECOMMENDATIONS

All sampling performed revealed the specific airborne and waterborne concentrations of the tested substances to be well below levels established by either the federal or state governments. At this time, no actions are necessary to gain or maintain compliance with these exposure limits.

VII. LIMITATIONS OF THE PRELIMINARY AIR QUALITY STUDY

DEI has prepared this Baseline Air and Water Sampling report using reasonable efforts in each phase of its work to establish the levels of specified chemicals in the project area. This report is not definitive and should not be assumed to be a complete or specific definition of the conditions inside the project area.

If you have any questions about this report, please feel free to call our office.

Sincerely,

Leslie A. Gilham
Project Manager

Jane P. Rowcliffe, CSP
Director of Northwest Operations

LAG/JPR/kk

Attachments

AIR TOXICS LTD.

Ambient Air: EPA Method TO - 11

DNPH Coated Cartridge

High Pressure Liquid Chromatography

Field Sample I.D.	Lab Sample I.D.	File Name	Sample Date	Analyzed For	Dilution Factor	MDL (uG)	Amount (uG)
18W-1	9301181-01A	4020903	1/29/93	Formaldehyde	1.0	0.50	Not Detected
18W-1 Duplicate	9301181-01AA	4020904	1/29/93	Formaldehyde	1.0	0.50	Not Detected
14E-1	9301181-02A	4020905	1/29/93	Formaldehyde	1.0	0.50	Not Detected
7S-1	9301181-03A	4020906	1/29/93	Formaldehyde	1.0	0.50	Not Detected
3N-1	9301181-04A	4020907	1/28/93	Formaldehyde	1.0	0.50	Not Detected
Lab Blank	9301181-05A	4020908	NA	Formaldehyde	1.0	0.50	Not Detected
Spiked Samples							**% Recovery**
Lab Spike	9301181-06A	4020909	NA	Formaldehyde	1.0	0.50	87

Extraction Date: 2/5/93
Analysis Date: 2/9/93

COMMENTS: NA=Not Applicable

AIR TOXICS LTD.

SAMPLE NAME: 18W-2
ID#: 9301180-01A
EPA METHOD TO-14 GC/MS Full Scan

File Name:	1021007	Date of Collection:	1/29/93
Dil. Factor:	2.1	Date of Analysis:	2/10/93

Compound	MDL (ppbv)	Amount (ppbv)
Freon 12	1.0	2.0
Freon 114	1.0	Not Detected
Chloromethane	1.0	Not Detected
Vinyl Chloride	1.0	Not Detected
Bromomethane	1.0	Not Detected
Chloroethane	1.0	Not Detected
Freon 11	1.0	2.4
1,1-Dichloroethene	1.0	Not Detected
Freon 113	1.0	Not Detected
Methylene Chloride	1.0	Not Detected
1,1-Dichloroethane	1.0	Not Detected
cis-1,2-Dichloroethene	1.0	Not Detected
Chloroform	1.0	Not Detected
1,1,1-Trichloroethane	1.0	Not Detected
Carbon Tetrachloride	1.0	Not Detected
Benzene	1.0	2.2
1,2-Dichloroethane	1.0	Not Detected
Trichloroethene	1.0	Not Detected
1,2-Dichloropropane	1.0	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected
Toluene	1.0	6.6
trans-1,3-Dichloropropene	1.0	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected
Tetrachloroethene	1.0	Not Detected
Ethylene Dibromide	1.0	Not Detected
Chlorobenzene	1.0	Not Detected
Ethyl Benzene	1.0	2.0
m,p-Xylene	1.0	6.3
o-Xylene	1.0	2.3
Styrene	1.0	Not Detected
1,1,2,2-Tetrachloroethane	1.0	Not Detected
1,3,5-Trimethylbenzene	1.0	2.0
1,2,4-Trimethylbenzene	1.0	4.3
1,3-Dichlorobenzene	1.0	Not Detected
1,4-Dichlorobenzene	1.0	Not Detected
Chlorotoluene	1.0	Not Detected
1,2-Dichlorobenzene	1.0	Not Detected
1,2,4-Trichlorobenzene	1.0	Not Detected
Hexachlorobutadiene	1.0	Not Detected

Container Type: 6 Liter Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	93	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	107	70-130

AIR TOXICS LTD.

SAMPLE NAME: 14E-2
ID#: 9301180-02A
EPA METHOD TO-14 GC/MS Full Scan

File Name:	1021009	Date of Collection:	1/29/93
Dil. Factor:	2.2	Date of Analysis:	2/10/93

Compound	MDL (ppbv)	Amount (ppbv)
Freon 12	1.1	Not Detected
Freon 114	1.1	Not Detected
Chloromethane	1.1	Not Detected
Vinyl Chloride	1.1	Not Detected
Bromomethane	1.1	Not Detected
Chloroethane	1.1	Not Detected
Freon 11	1.1	1.3
1,1-Dichloroethene	1.1	Not Detected
Freon 113	1.1	Not Detected
Methylene Chloride	1.1	Not Detected
1,1-Dichloroethane	1.1	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected
Chloroform	1.1	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected
Carbon Tetrachloride	1.1	Not Detected
Benzene	1.1	2.0
1,2-Dichloroethane	1.1	Not Detected
Trichloroethene	1.1	Not Detected
1,2-Dichloropropane	1.1	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected
Toluene	1.1	5.9
trans-1,3-Dichloropropene	1.1	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected
Tetrachloroethene	1.1	Not Detected
Ethylene Dibromide	1.1	Not Detected
Chlorobenzene	1.1	Not Detected
Ethyl Benzene	1.1	1.5
m,p-Xylene	1.1	4.7
o-Xylene	1.1	1.7
Styrene	1.1	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected
1,3,5-Trimethylbenzene	1.1	1.1
1,2,4-Trimethylbenzene	1.1	3.1
1,3-Dichlorobenzene	1.1	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected
Chlorotoluene	1.1	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected
1,2,4-Trichlorobenzene	1.1	Not Detected
Hexachlorobutadiene	1.1	Not Detected

Container Type: 6 Liter Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	94	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	101	70-130

AIR TOXICS LTD.

SAMPLE NAME: 7S-2
ID#: 9301180-03A
EPA METHOD TO-14 GC/MS Full Scan

File Name:	1021010	Date of Collection:	1/29/93
Dil. Factor:	1.9	Date of Analysis:	2/10/93

Compound	MDL (ppbv)	Amount (ppbv)
Freon 12	0.95	2.5
Freon 114	0.95	Not Detected
Chloromethane	0.95	Not Detected
Vinyl Chloride	0.95	Not Detected
Bromomethane	0.95	Not Detected
Chloroethane	0.95	Not Detected
Freon 11	0.95	1.2
1,1-Dichloroethene	0.95	Not Detected
Freon 113	0.95	Not Detected
Methylene Chloride	0.95	4.4
1,1-Dichloroethane	0.95	Not Detected
cis-1,2-Dichloroethene	0.95	Not Detected
Chloroform	0.95	Not Detected
1,1,1-Trichloroethane	0.95	Not Detected
Carbon Tetrachloride	0.95	Not Detected
Benzene	0.95	1.9
1,2-Dichloroethane	0.95	Not Detected
Trichloroethene	0.95	Not Detected
1,2-Dichloropropane	0.95	Not Detected
cis-1,3-Dichloropropene	0.95	Not Detected
Toluene	0.95	6.1
trans-1,3-Dichloropropene	0.95	Not Detected
1,1,2-Trichloroethane	0.95	Not Detected
Tetrachloroethene	0.95	Not Detected
Ethylene Dibromide	0.95	Not Detected
Chlorobenzene	0.95	Not Detected
Ethyl Benzene	0.95	1.5
m,p-Xylene	0.95	5.2
o-Xylene	0.95	2.0
Styrene	0.95	Not Detected
1,1,2,2-Tetrachloroethane	0.95	Not Detected
1,3,5-Trimethylbenzene	0.95	1.1
1,2,4-Trimethylbenzene	0.95	3.0
1,3-Dichlorobenzene	0.95	Not Detected
1,4-Dichlorobenzene	0.95	Not Detected
Chlorotoluene	0.95	Not Detected
1,2-Dichlorobenzene	0.95	Not Detected
1,2,4-Trichlorobenzene	0.95	Not Detected
Hexachlorobutadiene	0.95	Not Detected

Container Type: 6 Liter Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	102	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	99	70-130

AIR TOXICS LTD.

SAMPLE NAME: 3N-2
ID#: 9301180-04A
EPA METHOD TO-14 GC/MS Full Scan

File Name:	1021011	Date of Collection:	1/29/93
Dil. Factor:	1.6	Date of Analysis:	2/10/93

Compound	MDL (ppbv)	Amount (ppbv)
Freon 12	0.80	1.3
Freon 114	0.80	Not Detected
Chloromethane	0.80	Not Detected
Vinyl Chloride	0.80	Not Detected
Bromomethane	0.80	Not Detected
Chloroethane	0.80	Not Detected
Freon 11	0.80	1.0
1,1-Dichloroethene	0.80	Not Detected
Freon 113	0.80	Not Detected
Methylene Chloride	0.80	Not Detected
1,1-Dichloroethane	0.80	Not Detected
cis-1,2-Dichloroethene	0.80	Not Detected
Chloroform	0.80	Not Detected
1,1,1-Trichloroethane	0.80	Not Detected
Carbon Tetrachloride	0.80	Not Detected
Benzene	0.80	1.8
1,2-Dichloroethane	0.80	Not Detected
Trichloroethene	0.80	Not Detected
1,2-Dichloropropane	0.80	Not Detected
cis-1,3-Dichloropropene	0.80	Not Detected
Toluene	0.80	4.8
trans-1,3-Dichloropropene	0.80	Not Detected
1,1,2-Trichloroethane	0.80	Not Detected
Tetrachloroethene	0.80	Not Detected
Ethylene Dibromide	0.80	Not Detected
Chlorobenzene	0.80	Not Detected
Ethyl Benzene	0.80	1.4
m,p-Xylene	0.80	4.1
o-Xylene	0.80	1.4
Styrene	0.80	Not Detected
1,1,2,2-Tetrachloroethane	0.80	Not Detected
1,3,5-Trimethylbenzene	0.80	0.91
1,2,4-Trimethylbenzene	0.80	2.6
1,3-Dichlorobenzene	0.80	Not Detected
1,4-Dichlorobenzene	0.80	Not Detected
Chlorotoluene	0.80	Not Detected
1,2-Dichlorobenzene	0.80	Not Detected
1,2,4-Trichlorobenzene	0.80	Not Detected
Hexachlorobutadiene	0.80	Not Detected

Container Type: 6 Liter Canister

Surrogates	% Recovery	Method Limits
Octafluorotoluene	105	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	98	70-130

AIR TOXICS LTD.

SAMPLE NAME: Lab Blank
ID#: 9301180-05A
EPA METHOD TO-14 GC/MS Full Scan

File Name:	1021005	Date of Collection: NA	
Dil. Factor:	1.0	Date of Analysis: 2/10/93	

Compound	MDL (ppbv)	Amount (ppbv)
Freon 12	0.50	Not Detected
Freon 114	0.50	Not Detected
Chloromethane	0.50	Not Detected
Vinyl Chloride	0.50	Not Detected
Bromomethane	0.50	Not Detected
Chloroethane	0.50	Not Detected
Freon 11	0.50	Not Detected
1,1-Dichloroethene	0.50	Not Detected
Freon 113	0.50	Not Detected
Methylene Chloride	0.50	Not Detected
1,1-Dichloroethane	0.50	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected
Chloroform	0.50	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected
Carbon Tetrachloride	0.50	Not Detected
Benzene	0.50	Not Detected
1,2-Dichloroethane	0.50	Not Detected
Trichloroethene	0.50	Not Detected
1,2-Dichloropropane	0.50	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected
Toluene	0.50	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected
Tetrachloroethene	0.50	Not Detected
Ethylene Dibromide	0.50	Not Detected
Chlorobenzene	0.50	Not Detected
Ethyl Benzene	0.50	Not Detected
m,p-Xylene	0.50	Not Detected
o-Xylene	0.50	Not Detected
Styrene	0.50	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected
Chlorotoluene	0.50	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected
1,2,4-Trichlorobenzene	0.50	Not Detected
Hexachlorobutadiene	0.50	Not Detected

Container Type: NA

Surrogates	% Recovery	Method Limits
Octafluorotoluene	86	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	90	70-130

Analytical Technologies, Inc.

ATI I.D. # 9302-013

SAMPLE CROSS REFERENCE SHEET

CLIENT : DIAGNOSTIC ENVIRONMENTAL, INC.
PROJECT # : D2900
PROJECT NAME : EQUITABLE - SACRAMENTO

ATI #	CLIENT DESCRIPTION	DATE SAMPLED	MATRIX
9302-013-1	4E-1	01/29/93	WATER
9302-013-2	8W-1	01/29/93	WATER
9302-013-3	16E-1	01/29/93	WATER
9302-013-4	20W-1	01/29/93	WATER

----- TOTALS -----

MATRIX	# SAMPLES
WATER	4

ATI STANDARD DISPOSAL PRACTICE

The samples from this project will be disposed of in thirty (30) days from the date of the report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ATI I.D. # 9302-013

ANALYTICAL SCHEDULE

CLIENT : DIAGNOSTIC ENVIRONMENTAL, INC.
PROJECT # : D2900
PROJECT NAME : EQUITABLE - SACRAMENTO

ANALYSIS	TECHNIQUE	REFERENCE	LAB
LEAD	AA/GF	EPA 7421	R

R = ATI - Renton
SD = ATI - San Diego
PHX = ATI - Phoenix
PNR = ATI - Pensacola
FC = ATI - Fort Collins
SUB = Subcontract

Analytical Technologies, Inc.

ATI I.D. # 9302-013

METALS ANALYSIS

CLIENT : DIAGNOSTIC ENVIRONMENTAL, INC. MATRIX : WATER
PROJECT # : D2900
PROJECT NAME : EQUITABLE - SACRAMENTO

ELEMENT	DATE PREPARED	DATE ANALYZED
LEAD	02/03/93	02/05/93

Analytical Technologies, Inc.

ATI I.D. # 9302-013

METALS ANALYSIS
DATA SUMMARY

CLIENT : DIAGNOSTIC ENVIRONMENTAL, INC. MATRIX : WATER
PROJECT # : D2900
PROJECT NAME : EQUITABLE - SACRAMENTO UNITS : mg/L

ATI I.D. #	CLIENT I.D.	LEAD
9302-013-1	4E-1	0.0060
9302-013-2	8W-1	0.0062
9302-013-3	16E-1	<0.0030
9302-013-4	20W-1	0.0040
METHOD BLANK	-	<0.0030

Analytical Technologies, Inc.

ATI I.D. # 9302-013

METALS ANALYSIS
QUALITY CONTROL DATA

CLIENT : DIAGNOSTIC ENVIRONMENTAL, INC. MATRIX : WATER
PROJECT # : D2900
PROJECT NAME : EQUITABLE - SACRAMENTO UNITS : mg/L

ELEMENT	ATI I.D.	SAMPLE RESULT	DUP RESULT	RPD	SPIKED RESULT	SPIKE ADDED	% REC
LEAD	9301-172-1D	<0.0030	<0.0030	NC	0.0260	0.0250	104
LEAD	BLANK SPIKE	<0.0030	N/A	N/A	0.0264	0.0250	106

NC = Not Calculable.

$$\% \text{ Recovery} = \frac{(\text{Spike Sample Result} - \text{Sample Result})}{\text{Spike Concentration}} \times 100$$

$$\text{RPD (Relative \% Difference)} = \frac{(\text{Sample Result} - \text{Duplicate Result})}{\text{Average Result}} \times 100$$