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Glossary

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Glossary (continued)

acceptance limits

Data quality limits specified for analytical method performance.

accuracy

Accuracy is the degree of agreement between a measurement and the true or expected value, or between the average of a number of measurements and the true or expected value. Systematic errors affect accuracy. For chemical properties, accuracy is expressed either as a percent recovery (R) or as a percent bias (R - 100).

aliquot, aliquant

A measured portion of a sample taken for analysis.

analytical spike

A sample created by spiking target analytes into a prepared portion of a sample just prior to analysis. (Also see matrix spike.)

anomaly

See nonconformance.

areas needing improvement

Represent isolated instances of noncompliance or issues that are judged to have a less immediate impact on data quality. Laboratory management must correct the situation or otherwise ensure that the condition does not recur. This term replaces the previous term used "Observations."

arithmetic mean

The arithmetic mean ($\bar{x}$) is the average of a set of values. It is equal to the sum of the observed values divided by the number of observations. Also called "average".

where: $\bar{x}$ = the mean

x_i = the ith data value

n = number of data values

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n}$$

Glossary (continued)

assessment
The evaluation process used to measure the performance or effectiveness of a system and its elements. Assessment is used as an all-inclusive term to denote any of the following: performance, systems, data and compliance audits, management systems reviews, peer reviews, inspections, or spot assessments.

associate
Employee.

audit
A planned and documented investigative evaluation of an item or process to determine its adequacy and effectiveness as well as compliance with established procedures, instructions, drawings, quality management plans, and other applicable documents.

benchmarking
A step-by-step method of improving performance by identifying and studying best practices and comparing them to industry practices.

bias
A systematic (consistent) error in test results. Bias is expressed as the difference between the population mean and the true or reference value, or as estimated from sample statistics, the difference between the sample average and the reference value.

blind performance evaluation sample
A sample either submitted to the laboratory or prepared in the laboratory whereby the concentrations of parameters of concern are known by the preparer and not by the laboratory.

calibration
Establishment of a relationship between various calibration standards and the measurements of them obtained by a measurement system, or portions thereof. The levels of the calibration standard should bracket the range of levels at which actual measurements are to be made. Calibration is also the act of making a scheduled comparison of instrument performance against national standards for instruments

Glossary (continued)

which measure physical parameters such as mass, time, and temperature. This type of calibration is independent of use in specific analyses and projects.

calibration curve
The graphical relationship between the known values for a series of calibration standards and instrument responses.

calibration factor (CF)
The ratio of the instrument response of an analyte to the amount injected. CFs are used in external standard calibrations.

$$CF = \frac{Total\ Area\ of\ Peak}{Mass\ Injected}$$

calibration standard
A standard used to quantitate the relationship between the output of a sensor and a property to be measured. Calibration standards should be traceable to standard reference materials (provided by NIST, or other recognized standards agencies) or a primary standard.

Certificate of Analysis
The standard Quanterra® format for reporting analytical results.

certified reference material
A reference material accompanied by a certificate issued by an organization certifying the contents and concentration(s) of the material. (See also standard reference material.)

chain-of-custody (COC)
A system of documentation demonstrating the physical custody and traceability of samples.

Glossary (continued)

check standard analyses
A standard (often a midpoint standard) analyzed at a frequency specified in the method or in a SOP to verify the continuing calibration of the standard curve.

client
Any individual or organization for whom items or services are furnished or work is performed in response to defined requirements and expectations.

client sample
The material or collection media submitted to the laboratory for analysis. Field QC samples are considered client samples but laboratory QC samples are not counted as client samples when counting samples for QC batches.

coefficient of variation (relative standard deviation)
A measure of precision (relative dispersion). It is equal to the standard deviation (s) divided by the mean ($\bar{x}$) and multiplied by 100 to give a percentage value.

$$CV\,(RSD) = \left(\frac{s}{\bar{x}}\right) x\ 100$$

collocated samples
Independent samples collected in such a manner that they are equally representative of the variable(s) of interest at a given point in space and time. The results will indicate sampling as well as analytical variability.

comparability
Comparability is a measure of the confidence with which one data set can be compared to another. To ensure comparability, all laboratory analysts are required to use uniform procedures (i.e., SOPs) and a uniform set of units and calculations for analyzing and reporting environmental data.

Glossary (continued)

completeness

Completeness is a measure of the percentage of measurements that are judged to be valid measurements. At a minimum, the objective for completeness of data is 90% for each constituent analyzed. It is usually expressed as a percentage:

$$\%\,Completeness = \frac{V}{n} \times 100$$

where: V = number of measurements judged valid
n = total number of measurements

composite

A sample composed of two or more increments.

control chart

A graphical representation of analytical accuracy. Displays the arithmetic mean of a data set, the upper and lower warning limits and the upper and lower control limits.

control table

A tabular presentation of test results with respect to time or sequence of measurement, together with limits within which the results are expected to lie when the analytical process is in a state of control.

controlled document

A document for which the distribution is known. Updates of the document are sent to the original recipients, unless the copy distributed is an uncontrolled copy.

corrective action

A measure taken to rectify conditions adverse to quality and, where necessary, to preclude their recurrence.

Glossary (continued)

correlation coefficient
The correlation coefficient (r) is a determination of how closely data "fits" a straight line. It is a number between -1 and 1 that indicates the degree of linear relationship between two sets of numbers. A correlation coefficient of +1 (usually calculated to three decimal places or 1.000) means the data falls exactly on a straight line with positive slope. A correlation coefficient of -1 (or -1.000) means the data falls exactly on a straight line with negative slope.

customer
See client.

data quality objective (DQO)
Data quality objectives (DQOs) are qualitative and quantitative statements used to ensure the generation of the type, quantity, and quality of environmental data that will be appropriate for the intended application (EPA 1994). Typically, DQOs are identified during project scope and development of sampling and analysis plans. In this QA manual, however, we refer to only the analytical DQOs because laboratories generally do not have any authority over sample collection, shipment, or other field-related activities that may affect the data quality of the environmental sample before the sample is received in the laboratory. EPA has established six primary analytical DQOs for environmental studies: precision, accuracy, representativeness, completeness, comparability, and detectability.

The components of analytical variability (uncertainty) can be estimated when QA and QC samples of the right types and quantities are incorporated into measurement procedures at the analytical laboratory. Quanterra incorporates numerous QA and QC samples to obtain data for comparison with the analytical DQOs and to ensure that the measurement system is functioning properly. The QA and QC samples and their applications, described in Section 8.4 and are selected on the basis of method- or client-specific requirements. Field blanks, field duplicates, and performance evaluation (PE) samples are received from the client as unknown samples. Analytical laboratory QC samples for inorganic, organic, and radionuclide analyses may include calibration or instrument blanks, method blanks, background, duplicates, replicates, laboratory control samples (LCSs), calibration standards, matrix spikes (MSs), matrix spike duplicates (MSDs), surrogate spikes, and yield tracers.

Glossary (continued)

data validation
See validation - data.

data verification
See verification - data.

deficiency
See nonconformance or finding.

degrees of freedom
The number of independent deviations used in calculating an estimate of the standard deviation.

double blind performance evaluation sample
A sample that contains select parameters at defined levels. The levels are unknown to the laboratory. The laboratory is also unaware that the sample is a performance evaluation sample.

duplicate sample analyses
Different aliquots of the same sample are analyzed to evaluate the precision of an analysis.

error
The difference between an observed or measured value and its true value.

field blank
A blank that is prepared and handled in the field and analyzed in the same manner as its corresponding client samples.

field matrix spike
A sample created by spiking target analytes into a sample in the field at the point of sample acquisition.

Glossary (continued)

finding
Noncompliant practices or policies which have significant adverse impact on data quality, technical defensibility, or regulatory acceptance of data. Findings require immediate attention by the laboratory management and must be resolved to comply with Quanterra®'s quality documents and laboratory-established procedures often called deficiencies by auditors.

geometric mean
The nth root of the product of all values in a set of n values or the antilogarithm of the arithmetic mean of the logarithms of all the values of a set of n values. The geometric mean is generally used when the logarithms of a set of values are nearly normally (Gaussian) distributed, such as is the case of much population data.

initial calibration
Analysis of a series of analytical standards at different specified concentrations; used to define the linearity and dynamic range of the response of an instrument to the target compounds prior to the analysis of samples.

inspection
Examination or measurement of an item or activity to verify conformance to specific requirements.

instrument detection limit (IDL)
The smallest concentration or amount an instrument can reliably detect.

internal standard (IS)
A compound added to every standard, QC sample, client sample, or sample extract at a known concentration prior to analysis for the purpose of quantitation. For example, internal standards are used as the basis for quantitation of the target compounds by GC/MS.

linear regression
A statistical method for finding a straight line that best fits a set of two or more data points, thus providing a relationship between two or more variables.

Glossary (continued)

matrix
The component or substrate which contains the analyte(s) of interest. Examples of matrices are water, soil or sediment, and air. Matrix is not synonymous with phase (liquid or solid).

matrix effect
An interference in the measurement of analyte(s) in a sample that is caused by materials in the sample. Matrix effects may cause elevated reporting limits or may prevent the acquisition of acceptable results.

matrix spike (MS)
An aliquot of a matrix fortified (spiked) with known quantities of specific compounds and subjected to an entire analytical procedure in order to indicate the appropriateness of the method for a particular matrix. The percent recovery for the respective compound(s) is then calculated.

matrix spike duplicate (MSD)
A second aliquot of the same matrix as the matrix spike (above) that is spiked in order to determine the precision of the method.

may
Denotes permission but not a requirement.

mean
See arithmetic mean.

measurement
The process or operation of ascertaining the extent, degree, quantity, dimensions, or capability with respect to a standard.

median
The middle value of a set of data when the data set is ranked in increasing or decreasing order.

Glossary (continued)

method
An assemblage of techniques.

method blank (MB)
An analytical control consisting of all reagents, which may include internal standards and surrogate standards, that is carried through the entire analytical procedure. The method blank is used to define the level of laboratory background contamination. Examples of method blanks are a volume of deionized or distilled laboratory water for water samples, a purified solid matrix for soil/sediment samples, or a generated zero air.

method detection limit (MDL)
The minimum concentration of an analyte that, in a given matrix and with a specific method, can be identified, measured, and reported with 99% confidence that the analyte concentration is greater than zero. The MDL is operationally defined as:

$$MDL = st_{(n-1,\ \alpha=0.99)}$$

where:

s = the standard deviation of a number of measurements of a blind or sample matrix containing the analyte at a concentration near the lowest standard recommended in the method and

$t_{(n-1,\ \alpha=0.99)}$ = the student's value for a one-sided t-statistic appropriate for the number of samples used to determine (s), at the 99% confidence level and n-1 degrees of freedom.

modified method
A standard or reference method which has been changed to meet project or matrix requirements.

must
Denotes a requirement is mandatory and has to be met.

Glossary (continued)

notable practices

Laboratory practices that increase effectiveness and quality and represent improvements with respect to conventional laboratory operations.

nonconformance

An unplanned deviation from an established protocol or plan. The deviation may be the result of Quanterra's® actions, then termed a deficiency. If the deviation is the result of events beyond the control of Quanterra®, it is termed an anomaly.

operational calibration

Routinely performed as part of instrument usage, such as the development of a standard calibration curve. Operational calibration is generally performed for instrument systems.

outlier

A result excluded from the statistical calculations due to being deemed "suspicious" when applying the "Grubbs Test" (or equivalent).

parameter

A constant or coefficient that describes some characteristic of a population (e.g., standard deviation, mean, regression coefficients). Also, a chemical being measured, i.e., an analyte.

percent difference

When two independent measurements of the same characteristics are available, it is possible to use the percent difference instead of the coefficient of variation to measure precision.

$$\%D = \left| \frac{X_1 - X_2}{X_1} \right| x\ 100\%$$

where: $\%D$ = percent difference
X_1 = first value
X_2 = second value

Glossary (continued)

percent recovery

A measure of accuracy determined from the comparison of a reported spike value to its true spike concentration.

$$\%R = \frac{observed\ conc.\ -\ sample\ conc.}{true\ spike\ conc.} \times 100\%$$

performance audit

See performance evaluation.

performance evaluation (PE)

A type of audit in which a known or characterized value is compared to the result obtained through the routine analysis of the sample in the laboratory to evaluate the proficiency of an analyst or laboratory.

periodic calibration

A calibration that is performed at prescribed intervals for equipment such as balances, thermometers, and balance weights. In general, they are performed on equipment that are distinct, singular purpose units, and are relatively stable in performance.

population

A generic term denoting any finite or infinite collection of individual things, objects, or events.

practical quantitation limit (PQL)

The lowest concentration a method can reliably achieve within limits of precision and accuracy and is derived from empirical, matrix-free method performance studies.

precision

Precision is an estimate of variability, that is, it is an estimate of agreement among individual measurements of the same physical or chemical property, under prescribed similar conditions. The precision of a measurement system is affected by random errors. Precision is expressed either as relative standard deviation (RSD) for replicate measurements greater than two or as relative percent

Glossary (continued)

difference (RPD) for duplicate measurements. Table 8.6-1 illustrates the formulae used to calculate units of precision (i.e., RSD and RPD).

preventive maintenance
An organized program within Quanterra® laboratories of actions (such as equipment cleaning, lubricating, reconditioning, adjustment and/or testing) taken to maintain proper instrument and equipment performance and to prevent instruments and equipment from failing during use.

primary standard
A material having a known, stable property that can be accurately measured or derived from established physical or chemical constants. It is readily reproducible and can be accepted (within stated limits) and used to establish the same value of another substance or item.

procedure
Detailed instructions to permit replication of a method. (See standard operating procedure.)

proficiency testing
A series of planned tests which will determine the ability of field technicians or laboratory analysts to perform routine analyses. The results from this testing may be used for comparison against established criteria or for relative comparisons among the data from a group of technicians or analysts.

project-specific reporting limit (PSRL)
See reporting limit.

protocol
Methodology specified in regulatory, authoritative, or contractual situations.

QC batch
The QC batch consists of a set of up to 20 field samples that behave similarly (i.e., same matrix) and are processed using the same procedures, reagents, and standards within the same time period.

Glossary (continued)

QC check sample
A reference matrix containing known concentrations of parameters of interest. If prepared in the laboratory, it is made using stock standard solutions independent of those used for calibration. If the results of these parameters do not meet acceptance criteria, corrective actions are taken.

qualification (personnel)
The characteristics of abilities gained through education, training, or experience, as measured against established requirements, such as standards or tests, that qualify an individual to perform a required function.

quality
The sum of features and properties/characteristics of a process, item, or service that bears on its ability to meet the stated needs of the user. Quanterra® has defined quality as meeting the needs of our clients, both internal and external.

quality assurance (QA)
An integrated system of management activities involving planning, implementation, assessment, reporting, and quality improvement to ensure that a process, item, or service is of the type and quality needed and expected by the customer.

Quality Assurance Directive
QA directives are memos issued by the QA Director (or the QA Managers for their facility) to clarify policies, Procedures, and the QAMP; or to give direction for an immediate action to ensure or maintain quality.

Quality Assurance Management Plan (QAMP)
The Quality Assurance Management Plan for Environmental Analyses (QAMP) is a formal document that describes quality systems in terms of organizational structure, functional responsibilities of management, and staff, and lines of authority. The QAMP documents the QMS and describes both the organizational and project-specific principles, goals, controls, and tools of the QMS. The QAMP provides the criteria and specifications for the generation of environmental analytical data.

Glossary (continued)

Quality Assurance Project or Program Plan (QAPP)
A formal document describing in comprehensive detail the necessary QA, QC, and other technical activities that must be implemented to ensure the results of the work performed will satisfy the stated performance criteria.

quality control (QC)
The overall system of technical activities that measures the attributes and performance of a process, item, or service against defined standards to verify that it meets the stated requirements established by the client or by Quanterra®.

quality improvement
The process of improving the quality of operations. This process encourages worker recommendations for improvement of work processes and requires timely management evaluation and feedback or implementation.

quality management
That aspect of the overall management system of the organization that determines and implements the quality policy. Quality management includes strategic planning, allocation of resources, and other systematic activities (e.g., planning, implementation, and assessment) pertaining to the quality management system.

quality management system (QMS)
A structured and documented management system describing the policies, objectives, principles, organizational authority, responsibilities, and implementation plan of an organization for ensuring quality in its work processes, products, and services. The quality system provides the framework for planning, implementing, and assessing work performed by the organization and for carrying out required QA and QC.

random error
Variations of repeated measurements that are random in nature and individually not predictable.

Glossary (continued)

range
The difference between the largest and smallest numbers in a set of numbers.

raw data
All documentation associated with the original recording of analytical results pertinent to a specific sample or set of samples. This may include laboratory worksheets, calculation forms, instrument-generated output, analyst notes, etc., from sample receipt through final reporting.

reagent water
Water in which an interferant is not observed at or above the minimum quantitation limit of the parameters of interest. The reagent water's purity and acceptability is verified by analysis with each set of samples.

recovery
See percent recovery.

reference method
A method of known and demonstrated accuracy.

regression coefficients
The quantities describing the slope and intercept of a regression line.

relative error
An error expressed as a percentage of the true value or accepted reference value.

relative percent different (RPD)
Statistic for evaluating the precision of a replicate set. For replicate results:

$$RPD = \left[\frac{|X_1 - X_2|}{\left(\frac{X_1 + X_2}{2} \right)} \right] x\, 100$$

Glossary (continued)

where: X_1 = first observed concentration
X_2 = second observed concentration

relative response factor (RRF)
A measure of the relative mass spectral response of a compound compared to its internal standard. RRFs are determined by analysis of standards and are used in the calculation of concentrations of analytes in samples. Because a RRF is the comparison of two responses, it is a unitless number. RRFs are determined by the following equation:

$$RRF = \frac{A_x}{A_{IS}} x \frac{C_{IS}}{C_x}$$

where: A = area of the characteristic ion measured
C = concentration
IS = internal standard
x = analyte of interest

relative standard deviation (RSD)
See coefficient of variation.

reporting limit (RL)
One of two types of reporting limit conventions within Quanterra®. The Reporting Limit (RL) is a uniform, Quanterra® -wide reporting limit based on an evaluation of the PQLs at Quanterra® laboratories and the expected method performance in routine water and soil matrices. Project Specific Reporting Limits (PSRLs) are reporting limits that are defined by project requirements.

representative sample
A sample taken to represent a lot or population as accurately and precisely as possible.

Glossary (continued)

representativeness
Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, a variation in a physical or chemical property at a sampling point, or an environmental condition. Data representativeness is primarily a function of sampling strategy; therefore, the sampling scheme must be designed to maximize representativeness. Representativeness also relates to ensuring that, through sample homogeneity, the sample analysis result (concentration) is representative of the constituent concentration in the sample matrix. At each Quanterra laboratory, every effort must be made to analyze an aliquot that is representative of the original sample, and to ensure the homogeneity of the sample before subsampling.

reproducibility
The precision, usually expressed as a standard deviation, measuring the variability among results of measurements of the same sample at different laboratories.

response factor (RF)
A factor derived from the calibration of a compound that is used in the quantitation calculation of sample analytes. A response factor may be derived from an external standard calibration (then called a Calibration Factor) or from an internal standard calibration (then called a Relative Response Factor).

secondary standard
A material having a property that is calibrated against a primary standard.

self assessment
Assessments of work conducted by individuals, groups, or organizations directly responsible for overseeing or performing the work.

shall
Denotes a requirement that is mandatory and has to be met.

should
Denotes a guideline or recommendation.

Glossary (continued)

standard addition

The procedure of adding known increments of the analyte of interest to a sample to cause increases in detection response to subsequently establish, by extrapolation of the plotted responses, the level of the analyte of interest present in the original sample.

standard deviation

A measure of the dispersion about the mean of the elements in a population. The square root of the variance of a set of values:

$$s = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$$

where: s = standard deviation
Σ = sum of
X = observed values
n = number of observations

standardization

The establishment of the value of a potential standard with respect to an established or known standard.

standard method

A method of known and demonstrated precision issued by an organization generally recognized as competent to do so.

standard operating procedure (SOP)

A written document that details an operation, analysis, or action, with prescribed techniques and steps, that is officially approved as the method for performing certain routine or repetitive tasks.

Glossary (continued)

standard reference material (SRM)
A material produced in quantity, of which certain properties have been certified by the National Institute of Standards and Technology (NIST), formerly NBS, or other agencies to the extent possible to satisfy its intended use.

standard verification
Standard is checked by Quanterra® or the vendor versus a known specification. See Section 8.5.4.3.

statistic
A constant or coefficient that describes some characteristic of a sample. Statistics are used to estimate parameters of populations.

stock solution
A concentrated solution of analyte(s) or reagent(s) prepared and verified by prescribed procedure(s), and used for preparing working standards or standard solutions.

subsample
A portion taken from a sample. A laboratory sample may be a subsample of a gross sample; similarly, a test portion may be a subsample of a laboratory sample.

supplier
See vendor.

surrogate (surrogate standard)
Compounds, when required by a method, that are used added to every blank, sample, LCS, matrix spike, matrix spike duplicate, and standard. They are used to evaluate analytical efficiency by measuring recovery. Surrogates include brominated, fluorinated, or isotopically-labeled compounds that are not expected to be detected in environmental media.

systematic error
The condition of a consistent deviation of the results of a measurement process from the reference or known level.

Glossary (continued)

systems audit or evaluation
A systematic on-site qualitative review of facilities, procedures, equipment, training, record keeping, data verification, and reporting aspects of a quality assurance system to arrive at a measure of the capability of the system. Within Quanterra®, system audits or evaluations are performed on a periodic basis under the direction of the Quanterra® Corporate Director of Quality Assurance.

technique
Physical or chemical principle for characterizing materials of chemical systems.

traceability of data
The entire documented chain of acquired data from the original acquisition effort through to the final tabulation, synthesis, reduction, and storage activities. The documentation will allow complete reconstruction of the data.

traceability of samples
During all environmental monitoring field efforts, acquired samples will be assigned specific and unique identification numbers. These sample numbers shall be accompanied by documentation (chain-of-custody form) which clearly identifies all parameters associated with sample acquisition. All additional sample numbering systems applied to the sample must be clearly cross-referenced to the field sample number to provide for traceability of samples from acquisition to reporting of sample results.

traceability of standards
The ability of an analytical standard material used for calibration purposes to be traced to its source. The standards used by Quanterra® must be traceable via written documentation to sources which produce or sell verified or certified standards, i.e., National Institute for Standards and Technology, or vendors preparing standards from those sources which they have certified.

validation - computer software
The process of establishing documented evidence which provides a high degree of assurance that a specific process will consistently produce a product meeting predetermined specifications and quality

Glossary (continued)

attributes. This process demonstrates and documents that the software performs correctly and meets all specified requirements.

validation - data
The process of a second party performing a systematic review of the raw and final data produced by a laboratory using predetermined criteria to ascertain the validity of the data with respect to the criteria (e.g., HAZWRAP data validation).

vendor
Any individual or organization furnishing items or services or performing work according to a procurement document. This is an all-inclusive term used in place of any of the following: supplier, seller, contractor, subcontractor, or consultant.

verification - computer software
The process of checking the accuracy of manually entered or automatically (electronically) calculated information.

verification - data
The process of reviewing data to ensure that data reduction has been correctly performed and that analytical results to be reported correspond to the data acquired and processed.

Appendix A

Quanterra®
Quality Assurance Management Plan

Corporate Key Personnel List and Quanterra® Operations Organizational Chart

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Quanterra®
Corporate Key Personnel List

Associate Name	Title	Degree	Years of Experience
Gerhard F. König	President and CEO	MBA	33
Enos Tracey	Chief Financial Officer	BS, Accounting MBA, Accountancy	14
Elizabeth Counts	Human Resources Manager	MS, Human Resources	9
Mark Matthews	Chief Operating Officer	BA, Accounting	19
Chris M. Lee	Vice President Operations Services	Business/Biology	14
Donnie Heinrich	Senior Vice President of Sales	BS, Chemistry	23
Brad S. Figley	Senior Vice President Legal and Strategy	JD in Law	17
Bill Henning	Director of Information Technology	BA, Sociology MBA, Quantitative Studies	15
Jack Hall	Corporate Director of Quality Assurance	BS, Chemistry	34
Don Dihel	Corporate Director of Environmental Health and Safety	BA, Chemistry	24
Richard Burrows	Technology/Principal Scientist	BS, Chemistry Ph.D., Analytical Chemistry	13

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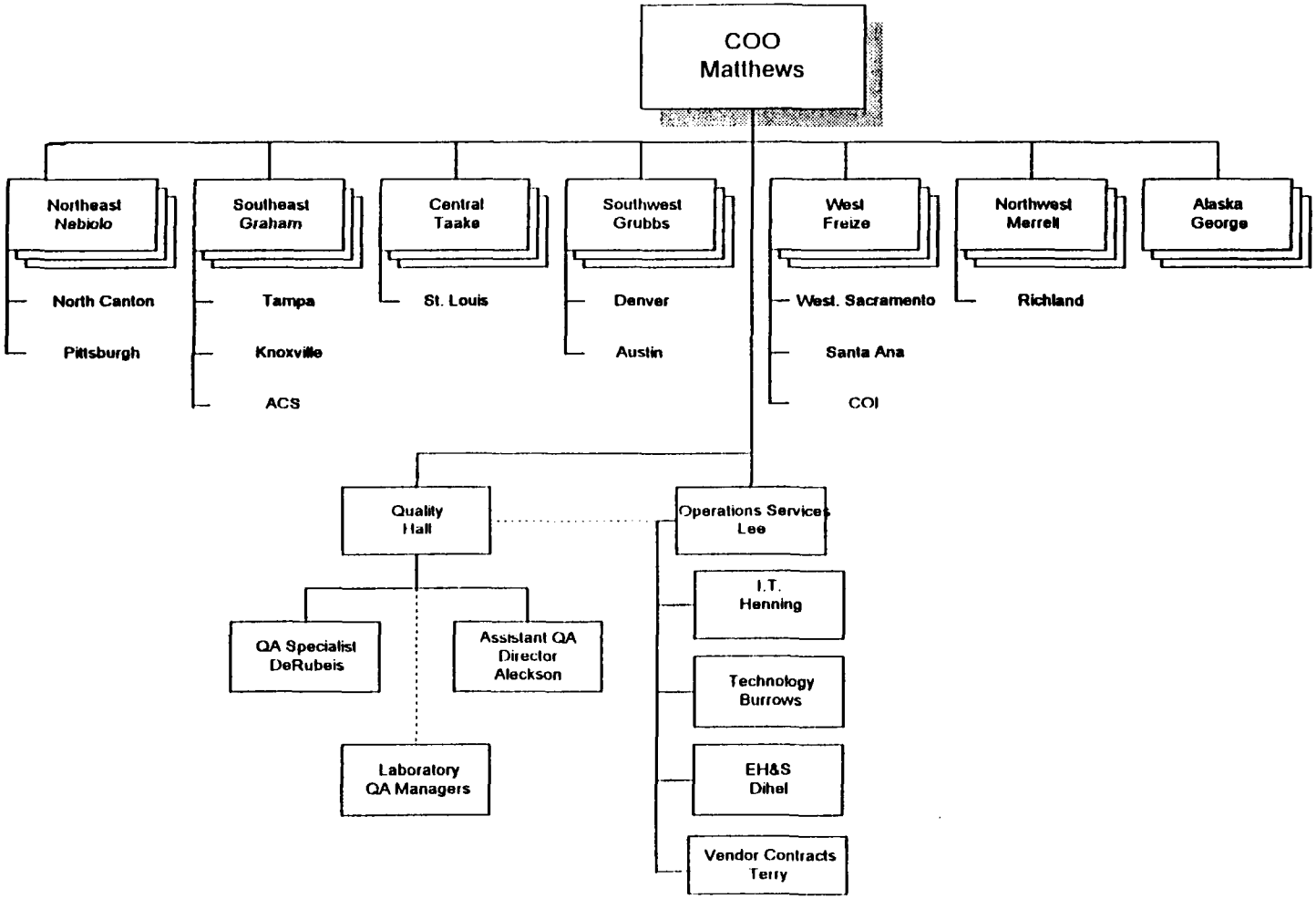
QUANTERRA OPERATIONS ORGANIZATIONAL CHART



as of 10/1/98

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Appendix B

Quanterra®
Quality Assurance Management Plan

Addresses of Quanterra® Locations

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APPENDIX B

ADDRESSES OF Quanterra® LOCATIONS

LABORATORIES

Alaska
Quanterra®
5761 Silverado Way
Suite N
Anchorage, Alaska 99518
Voice: (907) 563-4800
Fax: (907) 563-4815

California
Quanterra®
18501 East Gale Avenue
Suite 130
City of Industry, California 91748
Voice: (818) 965-1006
Fax: (818) 965-1003

Quanterra®
1721 South Grand Avenue
Santa Ana, California 92705
Voice: (714) 258-8610
Fax: (714) 258-0921

Quanterra®
880 Riverside Parkway
West Sacramento, California 95605
Voice: (916) 373-5600
Fax: (916) 372-1059

Colorado
Quanterra®
4955 Yarrow Street
Arvada, Colorado 80002
Voice: (303) 421-6611
Fax: (303) 431-7171

Florida
Quanterra®
5910 H Breckenridge Parkway
Tampa, Florida 33610
Voice: (813) 621-0784
Fax: (813) 623-6021

Missouri
Quanterra®
13715 Rider Trail North
Earth City, Missouri 63045
Voice: (314) 298-8566
Fax: (314) 298-8757

Ohio
Quanterra®
4101 Shuffel Drive, N.W.
North Canton, Ohio 44720
Voice: (330) 497-9396
Fax: (330) 497-0772

Pennsylvania
Quanterra®
450 William Pitt Way, Building 6
Pittsburgh, Pennsylvania 15238
Voice: (412) 826-5477
Fax: (412) 826-5571

Philadelphia Service Center
301 Chelsea Park Way
Boothwyn, PA 19061
Voice: (610) 485-7312
Fax: (610) 485-7314

LABORATORIES (Continued)

Tennessee
Quanterra®
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Voice: (423) 588-6401
Fax: (423) 584-4315

Texas
Quanterra®
5307 Industrial Oaks Boulevard
Suite 160
Austin, Texas 78735
Voice: (512) 892-6684
Fax: (512) 892-6652

Washington
Quanterra®
2800 George Washington Way
Richland, Washington 99352
Voice: (509) 375-3131
Fax: (509) 375-5590

ANALYTICAL CONSULTING SERVICES

Tennessee
Quanterra®
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Voice: (423) 588-6401
Fax: (423) 212-3085

CORPORATE HEADQUARTERS

Quanterra®
One DTC
5251 DTC Parkway
Suite 415
Englewood, Colorado 80111
Voice: (303) 796-2222
Fax: (303) 796-2002

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QUANTERRA® INCORPORATED

QAMP Change Form

DOCUMENT: Quality Assurance Management Plan, Revision No. 3
SECTION(S) AFFECTED BY CHANGE: Section 8.5.2, page 58; Appendix B, page 3.
REASON FOR ADDITION OR CHANGE: Section 8.5.2: To clarify the HT requirements and make consistent with Quanterra® Terms and Conditions. Appendix B: To correct area code for North Canton location.
CHANGE EFFECTIVE FROM: February 1, 1999
CHANGE: See attached pages.
SUBMITTED BY/DATE: Chris Rigell, 01/26/99
APPROVED BY:

Mark A. Matthews — **Date** 2/1/99
Chief Operating Officer

Chris M. Lee — **Date** 1/28/99
Vice President of Operations Services

Jack R. Hall — **Date** 1/26/99
Corporate Director of Quality Assurance

Appendix C

Quanterra®
Quality Assurance Management Plan

Facility-Specific Appendix

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APPENDIX B

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Santa Ana, California 92705
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Quanterra®
880 Riverside Parkway
West Sacramento, California 95605
Voice: (916) 373-5600
Fax: (916) 372-1059

Colorado
Quanterra®
4955 Yarrow Street
Arvada, Colorado 80002
Voice: (303) 421-6611
Fax: (303) 431-7171

Florida
Quanterra®
5910 H Breckenridge Parkway
Tampa, Florida 33610
Voice: (813) 621-0784
Fax: (813) 623-6021

Missouri
Quanterra®
13715 Rider Trail North
Earth City, Missouri 63045
Voice: (314) 298-8566
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Ohio
Quanterra®
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North Canton, Ohio 44720
Voice: (330) 497-9396
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Pittsburgh, Pennsylvania 15238
Voice: (412) 826-5477
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Philadelphia Service Center
301 Chelsea Park Way
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LABORATORIES (Continued)

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Texas
Quanterra®
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Washington
Quanterra®
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Fax: (509) 375-5590

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Facility Appendix

Quality Assurance Management Plan
Quanterra Incorporated

Sacramento Laboratory
880 Riverside Parkway
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(916) 373-5600

Approved by:

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Sacramento Laboratory

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Controlled Copy Number: 48

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Facility Appendix
Sacramento Laboratory

Section Sacramento-0

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Sacramento Laboratory

Section Sacramento-1

Organizational
Chart

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FIGURE 1-1

Quanterra West Sacramento

Regional General Manager
Roger Preize

Laboratory Manager
Bob Dovi
- Bethel Floyd, Facilities
- Joe Schairer, AA/IR Coordinator

Corp Staff
Sharyn Butler
Kathy Scott

Regional Information Technologies Manager
Scott Green
Brandy Jordan
Tom McClanahan
Dennis Edgerley

Chris Duncan
Mark Lund
Vicki Herd

Quality Assurance Manager
Gail Celaschi

Rose Harrelson
Delia Rangel

FAS Project Manager
Jim Reid

Peter Bourgeois
Mike Driscoll
Dave Kammerer
Phil Norton

Systems Manager
David Herbert

Project Management
Diana Brooks
Kendra DeSantolo
Jon Gildersleeve
Dan Prettyman
Nilo Ligi
Bonnie McNeill
Karl Filigenzi
Calvin Tanaka

Sample Control, Data Reporting, Reception/Archiving
Donna Christmon
Jim Chernobieff
Mary Dyas
Kelly Gonyea
Kim Weber
Cheryl Hytrek
Marcela Garcia

Health & Safety Manager
Cheryl Stith

Richard Kester

Advanced Technology Operations Manager
Eric Redman

Instruments
Karla Duechler

Andre Algazi
Saleh Arghestani
Maricel Baquerfo
Mike Filigenzi
Adrian Messecar
Clark Pickell
Teri Stone
Mike Flournoy

Project Management and Report Production
Terry Wilson
Maricon Estrada
Robert Hrabak
Jill Kellman
Rosie Romero

Prep and Air Toxics
Pat Rainey

Marc Onishi
Dennis Gall
Kathy Gill (CSM)
Boyd Harling
Hahn Nguyen
Brian Thompson
Steve Valmores
Robert Weidenfeld
Cyndi Westbrook
Marilyn Toomey
Kevin Sanchez

Organics Operations Manager
Mike Orbanosky

Organic Systems
Lisa Stafford

Volatiles
Harlan Loui

Scott Barmby
Tim Sanfelice
Mike Lucchesi
Kyle Stephens
Karen Yee
Karen Mason
Rob White

Organic Prep
Steve Rogers

Jonathan Reed
George Burkett
Betty Damron
Tony Young
Paul Massie
Lesa Waldron
Kristi Grove

Semi-Volatiles
Emily Uebelhoer

Jon Edmondson
Mitra Rafiei
Marcia Reed
Pam Niiya
Open
Donald Taylor

Bottle Prep/ Warehouse
Rav Lucero

Pramod Singh

Metals
John Barnett

Gloria Atwood
Open
Mei Ju Lai
Wenn Fun
David Allbucker
Barry Votaw
Allan Wong
Jane Adalid

General Chemistry
Josie Jones

Open
Hamid Faolad
Luz Gargaritano
Barry Marcks
Tuan Nguyen
Mark Frey
Kuldip Handal

Red/Underlined is new gain.

(Red/Parenthesis is pending loss due to resignation.)

Rev 05/20/98 | Head Count = 100 | Open Positions = 3

TABLE 1-1
SACRAMENTO LABORATORY
Key Personnel List

ASSOCIATE	JOB TITLE	DEGREE	DATE OF HIRE
Roger Freize, II	Western Regional Manager	M.B.A. B.S., Petroleum Engineering	5-06-85
Robert Dovi	Laboratory Manager	M.B.A. B.S., Chemistry	7-26-93
Michael W. Orbanosky	Operations Manager, Environmental Services	B.A., Biological Sciences	2-01-75
Dave Herbert	Systems Manager, Environmental Services	B.S. Biochemistry	5-22-89
Gail Cho Celaschi	Quality Assurance Manager	B.S., Food Science and Technology	3-11-91
Cheryl A. Stith	Health and Safety Manager	B.S., Biology	4-14-88
Steve Rogers	Area Leader, Organic Prep. Environmental Services	B.S.,Biochemistry and Biophysics	8-06-84
Harlan Loui	Area Leader, VOA Instruments	B.S., Biological Science	6-03-91
Elizabeth R. Stafford	Organics Systems Specialist	B.S., Chemistry	9-08-87
John Barnett	Area Leader, Metals	B.A., Environmental Biology	6-01-80
Patrick G. Rainey	Area Leader, Advanced Technology Extractions	B.S., Environmental Toxicology	10-20-88
Karla S. Buechler	Area Leader, Advanced Technology Instruments	B.S., Biochemistry	9-29-86
Terry A. Wilson	Area Leader, Advanded Technology Project Management	B.A., Biology	7-11-89
Eric Redman	Operations Manager, Advanced Technology	M.S., Chemical Physics B.S., Chemistry and Physics	8-10-88
Emily R. Uebelhoer	Area Leader,Semivolatiles Instruments	Lexington Christian Academy	1-05-87
Ray Lucero	Area Leader, Support Services		10-13-86
Josie Jones	Area Leader, General Chemistry	B.S., Chemistry	11-25-85

Facility Appendix
Sacramento Laboratory

Section Sacramento-2

Instrument
List

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TABLE 2-1
SACRAMENTO LABORATORY
Instrument List

Instrument Type	Manufacturer	Model-Serial #	Purchase Date	Autosampler
GC/MS	Finnigan	INCOS 50-14182	1988	Yes
	Finnigan	INCOS 50-IN295	1988	Yes
	Finnigan	INCOS 50-IN364	1989	Yes
	Finnigan	INCOS 50-IN315	1989	Yes
	Finnigan	INCOS 50-IN276	1989	Yes
	Hewlett-Packard	HP 5970-2905A11727	1989	Yes
	Hewlett-Packard	HP 5970-2905A11646	1989	Yes
	Hewlett-Packard	HP 5970-2905A11792	1989	Yes
	Hewlett-Packard	HP 5970-3004A12561	1991	Yes
	Hewlett-Packard	HP 5970-2905A12019	Unknown	Yes
	Finnigan	4500	1984	Yes
	Finnigan	4500	1981	Yes
	Finnigan	4500	1981	Yes
	Finnigan	4500	1986	Yes
	Finnigan	4500	1986	Yes
	Finnigan	INCOS 50	1988	Yes
	Finnigan	INCOS 50	1988	Yes
	Fisons	VG70	1988	Yes
	Fisons	VG70	1989	Yes
	Fisons	Ultima	1992	Yes
	Fisons	VG70	1990	Yes
GPC	ABC GPC Systems	1002B	-----	Yes
Data System	Finnigan	Nova 4	1981	No
	Finnigan	Nova 4	1981	No
	Fisons	VAX 3600	1992	No
LC/MS	Finnigan	TSQ 700-13967	1987	Yes
	Finnigan	TSQ 700-TS363	1989	Yes

TABLE 2-1
SACRAMENTO LABORATORY
Instrument List
(Continued)

Instrument Type	Manufacturer	Model-Serial #	Purchase Date	Autosampler
GC-ECD/TSD	Varian	V 3400-5458	1988	Yes
GC-FID/FID	Hewlett-Packard	6890-US00000311	1997	Yes
	Hewlett-Packard	6890-US00006455	1997	Yes
GC-ECD/ECD	Hewlett-Packard	6890-US00001087	1997	Yes
	Hewlett-Packard	6890-US00006442	1997	Yes
	Hewlett-Packard	6890-US00006441	1997	Yes
	Hewlett-Packard	6890-US00006438	1997	Yes
	Varian	V 3400-4152	1987	No
	Varian	V 3400-4139	1987	Yes
	Varian	V 3400-10220	1990	Yes
	Varian	V 3400-10221	1990	Yes
GC/FID	Varian	V 3400-1170	1985	No
GC-ELCD/ELCD	Hewlett-Packard	6890-US00006458	1997	Yes
	Hewlett-Packard	6890-US00006465	1997	Yes
GC-PID/PID/FID	Hewlett-Packard	6890-US00006463	1997	Yes
	Hewlett-Packerd	6890-US00006440	1997	Yes
	Hewlett-Packard	6890-US00006439	1997	Yes
GC-FPD/TSD	Varian	3300-2095	1985	Yes
	Varian	3740-81041622	1984	Yes
HPLC	Varian	V 5020-7243	—	No
	Varian	V 5560-0640	1984	Yes
	Varian	V 5500-1315	1986	Yes
	Varian	V 5560-1618	1988	Yes

TABLE 2-1
SACRAMENTO LABORATORY
Instrument List
(Continued)

Instrument Type	Manufacturer	Model-Serial #	Purchase Date	Autosampler
ICP	Thermo Jarrell Ash	9000-57483	1986	Yes
	Thermo Jarrell Ash	61e-44190	1990	Yes
ICP/Trace	Thermo Jarrell Ash	61E/275490	1994	Yes
ICP/MS	Perkin-Elmer	ELAN 6000-051950460	1994	Yes
	Perkin-Elmer	ELAN 6000-4719801	1998	Yes
GFAA	Perkin-Elmer	ZEEMAN 5100Z-6613	1989	Yes
	Perkin-Elmer	ZEEMAN 5100Z-6751	1988	Yes
	Perkin-Elmer	ZEEMAN 5100Z-6419	1990	Yes
Cold-Vapor Analyzers	Leeman	PS200-0270	1989?	Yes
	Leeman	PS200 II-HG-8008	1998	Yes
Wet Chem	Lachat	Quick Chem	1986	Yes
	Lachat	Model AE	1990	Yes
	Mitsubishi	TOX-10Sigma #1	1991	No
	Mitsubishi	TOX-10Sigma #2	1993	No
	Dohrmann	DC 190 - TOC #2	1992	Yes
	OI Corp	700-TOC #1	1987	Yes
	Radiometer	TT85-Autotitrator	1991	Yes
	Dionex	20101-IC System 1	1986	Yes
	Dionex	DX100-ICDX	1993	Yes
	Dionex	IC Cr+6	1993	Yes
	Milton Roy	21D - Spec.	1991	No
	Milton Roy	21D - Spec.	1992	No

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Facility Appendix
Sacramento Laboratory

Section Sacramento-3

Standard
Operating
Procedures

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TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List

SOP No.	Rev. No.	Rev. Date	Title
A-CAL-0016	1.0	3/30/92	LIMS Daily Backup SOP
CORP-GC-0001	3.0	12/15/97	Gas Chromatographic Analysis Based on Method 8000B, 8021B, 8081A, 8082, and 8151A, SW-846
CORP-GC-0001SAC	4.0	3/20/97	Gas Chromatographic Analysis Based on Method 8000a, 8010B, 8020A, 8021a, 8080A, 8081, 8140, and 8150B, 8151 SW-846
CORP-IP-0001	0.0	12/9/95	Acid Digestion of Waters and Soils, CLP SOW ILM03.0
CORP-IP-0002	1.0	12/10/97	Acid Digestion of Soils, SW-846 Method 3050B
CORP-IP-0004	0.0	1/12/96	TCLP and SPLP
CORP-IT-0001	0.0	7/21/97	Software and Hardware Change Management
CORP-IT-0002	0.0	10/3/97	Information Technology Service Request
CORP-IT-0005	0.0	7/22/97	LIMS User Profile Setup and Maintenance
CORP-IT-0007	0.0	6/13/97	Software Tesinting, Validation, and Verification
CORP-IT-013	0.0	6/2/97	Software Quality Assurance
CORP-IT-014	0.0	7/21/97	Software and Hardware, Licensing, Security, and Backup
CORP-MS-0001	2.0	12/15/97	GC/MS Analysis Based on Method 8270C and 625
CORP-MS-0001SAC	2.0	8/12/96	GC/MS Analysis Based on Method 8270B, SW-846
CORP-MS-0002	2.0	12/15/97	Determination of Volatile Organics by GC/MS Based on Method 8260B, 624, and 524.2
CORP-MS-0002SAC	2.0	8/19/96	Determination of Volatile Organics by GC/MS Based on 8240B and 8260A
CORP-MT-0001	2.0	12/15/97	Inductively Coupled Plasma-Atomic Emission Spectroscopy, Spectrometric Method for Trace Element Analyses, SW-846Method 6010B, 200.7
CORP-MT-0001SAC	2.0	8/19/96	ICP-Atomic Spectroscopy, Spectrometric Method for Trace Element Analyses, SW-846 Method 6010A, and Method 200.7
CORP-MT-0002	1.0	7/21/95	Inductively Coupled Plasma-Atomic Emission Spectroscopy, Method 200.7 CLP-M, SOW ILM03.0
CORP-MT-0002SAC	1.1	9/4/96	ICP Atomic Emission Spectroscopy, Method 200.7, CLP-M, SOW ILM03.0
CORP-MT-0003SAC	1.1	9/4/96	GFAA Spectroscopy, SW-846 Method 7000A and MCAWW 200 Series
CORP-MT-0004SAC	0.1	8/23/96	GFAA Spectroscopy Method, 2XX.X CLP-M, SOW ILMO3.0

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
CORP-MT-0005	1.0	12/19/95	Preparation and Analysis of Mercury in Solid Samples by CVAA Spectroscopy, SW846 7471A and MCAWW 245.5
CORP-MT-0006	0.0	8/1/95	Preparation and Analysis of Mercury in Aqueous Samples by CVAA, SW846 7470A and Method 245.1 CLP-M, SOW ILMO3.0
CORP-MT-0007	1.0	12/19/95	Preparation and Analysis of Mercury in Solid Samples by CVAA spectroscopy, SW846 7471A and MCAWW 245.5
CORP-MT-0008	0.0	8/1/95	Preparation and Analysis of Mercury in Solid Samples by CVAA Spectoscopy, SW846 7471A and Method 245.5 CLP-M, SOWILMO3.0
CORP-OP-0001	3.0	12/15/97	Extraction & Cleanup of Organic Compounds From Waters and Soils Based on SW846 3500 Series, 3600 Series, 8151A, and 600 Series Methods
CORP-OP-0001SAC	2.1	4/9/97	Extraction and Cleanup of Organic Compounds from Waters and Soils based on SW-846 3500 Series, 3600 Series, 8510, 8151, and 600 Series Method
CORP-QA-0001	2.0	7/09/97	Solvent Quality Testing Requirements
CORP-QA-0002	0	1/27/95	QuantIMS Reference Data Creation and Maintenance
CORP-QA-0010	0	4/23/97	Nonconformance and Corrective Action
CORP-QA-0012	0	4/29/96	Selection & Evaluation of Subcontractor Laboratories
CORP-QA-0013	0	10/01/96	Employee Orientaton & Training
CORP-QA-0014	0	6/30/97	Laboratory Internal Systems Evaluation
CORP-WC-0001	0	2/22/96	Total Organic Halides in Waters by SW846 Method 9020B
CORP-WC-0002	1.0	6/28/96	Determination of Solids in Waters and Wastes
CORP-WC-0003	0	2/9/96	HEM/SGT-HEM by Method 1664(formerly Oil & Grease/TPH)
LE-CAL-1011	0	12/1/87	Lachet QuikChem Instrument Operation
LE-CAL-1012	0	6/24/89	Operation of Dioxin Ion Chromatograph
LE-CAL-1013	0	6/24/89	Operation of O.I. Model 700 TOC Analyzer
LE-CAL-2083	0	1/31/91	ICP Preventative Maintenance
LE-CAL-2084	0	4/3/89	ICP Instrument Operation
LE-CAL-2093	0	11/16/87	Graphite Furnace Maintenance
LE-CAL-3005	1.0	7/15/92	Preventative Maintenance for VG-70 GCMS Systems

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
LE-CAL-4007	0	9/20/89	Operation SOP for the Gel Permeation Chromatography
LEG-001	0	6/1/94	Ethics Policy
LEG-003	0	3/1/95	Policy & Procedure Management
LEG-004	0	3/1/95	Record Retention
LEG-005	0	2/1/95	Internal Investigations
LEG-006	0	2/1/95	Subpoenas
LEG-008	0	2/1/95	Outside Communication
LEG-009	0	7/1/96	Quanterra Compliance Program
LM-CAL-1001	0	12/1/87	Color (EPA 110.2)
LM-CAL-1002	0	12/1/87	Conductivity (EPA 120.1)
LM-CAL-1004	0	12/1/87	pH of Water (EPA 150.1)
LM-CAL-1010	1.0	7/27/90	Turbidity (EPA 180.1)
LM-CAL-1011	0	12/1/87	Acidity (EPA 305.1)
LM-CAL-1016	0	12/1/87	Sulfate - Turbidimetric (EPA 375.4)
LM-CAL-1018	0	12/1/87	Chloride by AgNO3 Titration (EPA 407A)
LM-CAL-1019	0	3/19/90	Chemical Oxygen Demand/COD (Method 410.4)
LM-CAL-1022	0	3/8/90	Ignitability (EPA 1010)
LM-CAL-1023	0	12/1/87	Organic Carbon in Soils
LM-CAL-1027	0	1/13/88	Total Hardness-Colorimetric (EPA 130.1)
LM-CAL-1028	0	12/1/87	Total Hardness - Titrimetric (EPA 130.2)
LM-CAL-1032	0	1/14/88	Chloride by $Hg(NO_3)_2$ Titration (EPA 325.3)
LM-CAL-1034	2.0	10/12/93	Cyanide: Automated Analysis (EPA 335.3)
LM-CAL-1035	0	1/14/88	Nitrogen, Total Kjeldahl/TKN (EPA 351.1)
LM-CAL-1036	2.0	5/30/90	Nitrate/Nitrite - Colorimetric (EPA 353.2)
LM-CAL-1039	0	1/13/88	Phosphorous- Colorimetric (EPA 365.2)
LM-CAL-1042	1.0	3/8/90	Sulfide (EPA 376.2)

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
LM-CAL-1044	4.0	10/7/93	Total Organic Carbon in Water - Method 9060 Modified
LM-CAL-1045	2.0	6/28/90	Phenols, Total: Distillation
LM-CAL-1050	1.0	9/21/93	Hexavalent Chromium - Method 7196
LM-CAL-1051	3.0	3/5/90	Anions by Ion Chromatography (EPA 300.0)
LM-CAL-1053	0	6/28/90	Cyanide, Total: Micro Distillation
LM-CAL-1055	0	10/24/94	Alkalinity Manual Titration
LM-CAL-1101	0	6/28/90	Cyanide, Weak Acid Dissociable: Macro Distillation
LM-CAL-1102	0	6/28/90	Cyanide, Amenable to Chlorination
LM-CAL-1103	2.0	10/12/93	Total Recoverable Phenolics Automated Analysis - Method 420.1 Modified
LM-CAL-1105	1.0	3/6/90	Ammonia (EPA 350.1)
LM-CAL-1106	1.0	6/15/93	Method 9060 (Modified): TOC in Soil
LM-CAL-2039	2.0	3/22/94	Analysis of Bromide by ICP/MS (GLP Protocol)
LM-CAL-2061	2.0	3/8/94	Digestion of Soils, Sediments, and Sludges for Metals Analysis SW846-Method 3050A
LM-CAL-2063	1.0	3/1/89	Acid Digestion of Oil/Grease/Wax (EPA 3030)
LM-CAL-2065	0	11/16/87	Deionized Water Extract (DI-Leach)
LM-CAL-2067	0	11/16/87	CAM Metals/STLC (Title 22)
LM-CAL-2077	1.0	4/12/90	Percent Solids
LM-CAL-2082	0	11/16/87	Redigestion
LM-CAL-2108	2.0	5/2/94	Metals Digestion-Aqueous SW3010 and SW3020
LM-CAL-2109	0.0	8/25/93	Fish Tissue Metals Digestion
LM-CAL-3002AD	0	10/22/93	ADDENDUM-Analysis of Polychlorinated Dioxins and Furans by Low Res. GC/MS
LM-CAL-3003AD	0	10/22/93	ADDENDUM - Analysis of Polychlorinated Dioxins/Furans by Low Res. GC/MS
LM-CAL-3011	2.0	12/5/92	Gas Chromatography/Mass Spectrometry Analysis of Volatile Organics According to EPA CLP SOW 3-90, OLMO1.1.1

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
LM-CAL-3012	1.0	12/04/91	Gas Chromatography/Mass Spectrometry of Semivolatile Organics According to EPA CLP SOW 3/90
LM-CAL-3012 Addendum	0.0	11/12/93	Gas Chromatography/Mass Spectrometry of Semivolatile Organics According to EPA CLP SOW 3/90, OLM01.1.1
LM-CAL-3066	1.0	4/28/94	Method 1613 Rev. A Tetra- through Octa-Chlorinated Dioxins and furans by Isotope Dilution HRGC/HRMS
LM-CAL-3073	0	10/17/94	PCBs Analysis by HRGC/HRMS
LM-CAL-4062	1.0	6/19/91	Dinoseb (DNBP) in Water [client specific SOP]
LM-CAL-4063	1.0	6/19/91	Dinoseb (DNBP) in Soil [client specific SOP]
LM-CAL-4115	0.0	8/1/91	Analysis of Organochlorine Pesticides and/or PCB's in Prepared Extracts According to CLP 3/90 SOW
LM-CAL-7006	0	9/18/92	CARB Method 421: Determination of Hydrochloric Acid Emissions from Stationary Sources
LM-CAL-7008	0	2/18/93	Determination of Total Chromium and Hexavalent Chromium Emissions from Stationary Sources (CARB Method 425)
LM-CAL-7012	1.0	8/8/94	Determination of Metals from PM Collected on High Volume Air Filters Using ICP, GFAA, and CVAA
LM-CAL-7014	0	8/8/94	Responsibilities of Spike Witness for Air Toxics Media
LP-CAL-0020	0	8/3/92	Cooler Cleaning and Return
LP-CAL-1002	0	5/26/89	Pipet Washing Procedure
LP-CAL-3001	0	12/27/91	Repair and Maintenance of GPC Columns - Waters and Manual Systems
LP-CAL-3006	0	1/4/93	Responsibilities of A Spike Witness - HiRes Dioxins
LP-CAL-4010	0	12/23/91	Daily Set-up Procedure and Maintenance of the ABC 1002B GPC Sampler Processing Unit
LS-CAL-0026	2.0	11/26/91	GC/MS & GC Standards Quality Control Check
LS-CAL-0028	3.0	4/29/93	Glassware Washing for GLP Projects
LS-CAL-2002	2.0	5/25/94	Standards and QC Solutions Preparation-Metals (formerly named Standards Logs for ICP Metals)
LS-CAL-4008	0	3/2/94	Preparation of 5% NaCl

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
LS-CAL-4011	1.0	12/3/91	GC and LC/MS Standard Preparation and Quality Control Check
QA-001	1.0	7/1/96	Preparation and Management of Standard Operating Procedures
QA-003	1.0	8/19/96	Quanterra Quality Control Program
QA-004	1.0	6/12/96	Rounding and Significant Figures
QA-005	1.0	2/26/96	Determination of Method Detection Limits for Chemical Tests
QA-008	1.0	10/1/96	Data Recording Requirements
QA-009	2.0	3/10/97	Establishment of Reporting Limits
QA-010	1.0	10/23/96	Maintaining Time Integrity
QA-011	1.0	8/15/96	Acceptable Manual Integration Practices
QA-012	0.0	10/31/96	Technical Data Review Requirements
QA-013	0.0	6/30/97	Procedures to Address Customer Complaints
SAC-GC-0006	0	2/24/97	Determination of White Phosphorous in Soil by GC with GC/FPD
SAC-GC-0007	0	10/23/97	Gas Chromatographic Analysis based on Method 8000A, 8015A, SW846 Update II and California LUFT Manual, October 1989
SAC-GC-0010	0	3/5/98	Gas Chromatographic Analysis of Prepared Extracts for Total Chromatographic Organics (TCO), Semivolatile and Volatile Fractions
SAC-ID-0001	0	9/22/95	Diuron Extraction Procedure
SAC-ID-0002	0	9/26/95	Simazine Extraction Procedure
SAC-ID-0003	0	9/26/95	Atrazine Extraction Procedure
SAC-ID-0004	0	10/6/95	Chlorothalonil Extraction Procedure
SAC-ID-0005	3.0	5/20/97	Method 8290 - Polychlorinated Dioxins & Furans by HRGC/HRMS
SAC-ID-0008	3.0	12/11/96	Analysis of Polychlorinated Dioxins & Furans by LRMS/HRGC
SAC-IP-0006	1.0	4/9/96	Determination of Particulate Matter in the Atmosphere as Total Suspended Particulates or PM10 (High Volume Method)
SAC-IP-0007	0	7/11/96	Metals Preparation of Emissions Test Method 29
SAC-IP-0008	0.0	8/4/97	Metals Matrix Matching for Analysis of Dissolved Metals

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
SAC-LC-0001	5.0	1/3/96	Determination of Nitroaromatics, Nitramines, and Specialty Explosives in Water and Soil by HPLC/UV and LC/TSP/MS
SAC-MT-0001	1.0	9/23/96	Analysis of Metals by Inductively Coupled Plasma/Mass Spectroscopy
SAC-OP-0006	0.0	4/4/96	Preparation and Extraction of Semivolatiles Organic Constituents on Polyurethane Foam/XAD-2 Resin Samples for GC/MS
SAC-OP-0007	0.0	7/22/96	Method TO-4(Modified): Extraction of Organochlorine Pesticides for GC/ECD Analysis (Polyurethane Foam Samples, PUF)
SAC-OP-0010	0	10/16/97	Extraction of Pentachlorophenol and 2,3,4,6-Tetrachlorophenol in Water and Soil by Modified SW8151A
SAC-OP-0011	0	12/23/97	Cleaning of Glassware (Organics)
SAC-OP-4177	0	3/8/95	Despatch VRE2-35-1E Oven Operation
SAC-QA-0001	4.0	7/18/95	Building Security
SAC-QA-0002	0.0	2/12/96	Procedure for the Set-Up Maintenance and Analysis of Holding Blanks for Volatile Refrigerators
SAC-QA-0003	5.0	7/3/96	Sample Receipt and Procedures
SAC-QA-0004	1.0	7/8/96	Maintenance and Calibration Check of Fixed and Adjustable Volume Autopipetors
SAC-QA-0005	2.0	3/11/98	Temperature Monitoring and Corrective Actions for Refrigerators and Freezers
SAC-QA-0006	0.0	1/2/97	MDLs and IDLs
SAC-QA-0007	5.0	3/14/97	Bottles and Cooler Preparation
SAC-QA-0008	3.0	4/11/97	GLP- Study Organization and Personnel
SAC-QA-0009	1.0	6/5/97	Document Archiving/Study Records
SAC-QA-0010	3.0	4/10/97	GLP-Study Protocols
SAC-QA-0011	2.0	4/10/97	GLP-System Auditing
SAC-QA-0014	0	12/11/97	Monitoring of Reagent Grade Laboratory Water
SAC-WC-0011	0	5/30/96	Determination of Hexavalent Chromium Emissions from Stationary Sources by Ion Chromatography and Method CARB 425

TABLE 3-1
SACRAMENTO LABORATORY
Standard Operating Procedures List
(continued)

SOP No.	Rev. No.	Rev. Date	Title
SAC-WC-0012	0	2/12/96	Determination of Hydrogen Halides and Halogen Emissions from Stationary Sources by Ion Chromatography (Method 26, 26A, Method 9057)
SAC-WC-0044	1.0	12/5/97	pH on Soils 9045B
SAC-WC-0049	1.0	2/6/98	Deionized Water (DI-Leach) for General Chemistry Analyses

Facility Appendix
Sacramento Laboratory

Section Sacramento-4

Analytical
Methods

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TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Alkalinity	Water	Method 310.1[1]	Not Applicable	Not Applicable	Standard Method 2320B (19th Ed.)
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 310.1[3]
Ammonia	Water	Method 350.1	Not Applicable	Not Applicable	Standard Method 4500-NH_3 G, Method 350.1[2]
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 350.1[2,3]

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Bromide	Water	Method 300.0	Not Applicable	Not Applicable	Method 200.8
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 300.0[3]
Chloride	Water	Method 300.0 Method 325.2 Method 325.3	Method 9251	Not Applicable	Standard Method 4110B, Standard Method 4500-Cl E
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 300.0[3] Method 325.2[3] Method 325.3[3]
Specific Conductance	Water	Method 120.1	Method 9050A	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Cyanide (Amenable)	Water	Method 335.1+335.2+335.3	Method 9012A-Update III	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 9012A	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Cyanide (Amenable) (continued)	TCLP Leachate	Not Applicable	Method 9012A	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 9012A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 9012A (Modified)	Not Applicable	Not Applicable
Cyanide (Total)	Water	Method 335.2, Method 335.3	Method 9012A	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 9012A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 9012A	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 9012A	Not Applicable	Not Applicable
	Soil	Method 335.2-3 (Modified)	Method 9012A (Modified)	Method CLP, 335.2 CLP-M	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Chemical Oxygen Demand	Water	Method 410.4	Not Applicable	Not Applicable	Hach Kit
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Method 410.4	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 410.4
Fluoride	Water	Method 300.0[2]	Not Applicable	Not Applicable	Standard Method 4110B, Method 340.2[2]
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Hardness	Water	Method 130.2	Not Applicable	Not Applicable	Standard Method 2340 B+C
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Nitrite (NO_2)	Water	Method 300.0 (non-preserved) Method 353.2 (preserved or non-preserved)	Not Applicable	Not Applicable	Standard Method 4110B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Method 300.0	Not Applicable	Not Applicable	Method 353.2[3]
Nitrate (NO_3)	Water	Method 300.0 (non-preserved) Method 353.2 (preserved or non-preserved)	Not Applicable	Not Applicable	Standard Method 4110B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Method 300.0	Not Applicable	Not Applicable	Method 353.2[3]
Nitrate plus Nitrite	Water	Method 353.2 (preserved or non-preserved)	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Nitrate plus Nitrite (continued)	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 353.2[3]
Total Kjeldahl Nitrogen (TKN)	Water	Method 351.2	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 351.2 (Modified)
Oil and Grease	Water	Method 1664	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Method 1664	Not Applicable	Not Applicable	Not Applicable
	Soil	Method 1664	Not Applicable	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Ortho-phosphate	Water	Method 300.0 (unpreserved) Method 365.3 (unpreserved)	Not Applicable	Not Applicable	Standard Method 4110B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Method 300.0	Not Applicable	Not Applicable	Not Applicable
pH	Water	Method 150.1 Method 150.2	Method 9040A	Not Applicable	Standard Method 4500-H-B
	Liquid	Not Applicable	Method 9040A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 9045B, 9040A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 9045B	Not Applicable	Not Applicable
Phenolics	Water	Method 420.1[2] Method 420.2[2]	Method 9065 Method 9066	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Phenolics (Continued)	Soil	Not Applicable	Not Applicable	Not Applicable	SW9065, 9066 Modified. Method 420.1.2 Modified
Phosphorus (Total)	Water	Method 365.3	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 365.3 Modified
Sulfate (SO_4)	Water	Method 300.0 Method 375.4	Not Applicable	Not Applicable	Standard Method 4110B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Method 300.0	Not Applicable	Not Applicable	Not Applicable
Sulfide	Water	Method 376.2	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Total Organic Carbon (TOC)	Water	Method 415.1	Method 9060A	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste. Industrial Waste. Sludge. Solid. Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 415.1 Modified. Method 9060A Modified

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Total Organic Halides (TOX)	Water	Not Applicable	Method 9020B	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 9020B	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Total Solids	Water	Method 160.3	Not Applicable	Not Applicable	Standard Method 2540B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Total Dissolved Solids	Water	Method 160.1	Not Applicable	Not Applicable	Standard Method 2540C
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-1
SACRAMENTO LABORATORY
Wet Chemistry Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Total Suspended Solids	Water	Method 160.2	Not Applicable	Not Applicable	Standard Method 2540D
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Volatile Solids and Volatile Suspended Solids	Water	Method 160.4	Not Applicable	Not Applicable	Standard Method 2540E
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Settleable Solids	Water	Method 160.5	Not Applicable	Not Applicable	Standard Method 2540F
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-2
SACRAMENTO LABORATORY
Inorganic Graphite Furnace Metals and Mercury Methods

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Antimony	Water	Not Applicable	Method 3020A + Method 7041	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020Aor 3050B + Method 7041	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7041	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solid, Sediment	Not Applicable	Method 3050B+ Method 7041	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B+ Method 7041	Method CLP	Not Applicable
Arsenic	Water	Not Applicable	Method 3020A + 7060A	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + 7060A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + 7060A	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 7060A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B+ Method 7060A	Method CLP	Not Applicable
Lead	Water	Not Applicable	Method 3020A + Method 7421	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + Method 7421	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7421	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7421	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B + Method 7421	Method CLP	Not Applicable
Selenium	Water	Not Applicable	Method 7740	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3050B + 7740	Not Applicable	Not Applicable

TABLE 4-2
SACRAMENTO LABORATORY
Inorganic Graphite Furnace Metals and Mercury Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Selenium (Continued)	TCLP Leachate	Not Applicable	Method 7740	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7740	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B+ Method 7740	Method CLP	Not Applicable
Silver	Water	Not Applicable	Method 3020A + Method 7761	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + Method 7761	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7761	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment, Soil	Not Applicable	Method 3050B + Method 7761	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B+ Method 7761	CLP Method	Not Applicable
Thallium	Water	Not Applicable	Method 3020A + Method 7841	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + Method 7841	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7841	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7841	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B + Method 7841	Method CLP	Not Applicable
Cadmium	Water	Not Applicable	Method 3020A + Method 7131A	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B+ Method 7131A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7131A	Not Applicable	Not Applicable

TABLE 4-2
SACRAMENTO LABORATORY
Inorganic Graphite Furnace Metals and Mercury Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Cadmium (Continued)	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7131A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B + Method 7131A	Method CLP	Not Applicable
Chromium	Water	Not Applicable	Method 3020A + Method 7191	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + Method 7191	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7191	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7191	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B+ Method 7191	Method CLP	Not Applicable
Nickel	Water	Not Applicable	Method 3020A + Method 7521	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3020A or 3050B + Method 7521	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3020A + Method 7521	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 7521	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3050B + Method 7521	Method CLP	Not Applicable
Mercury	Water	Method 245.1	Method 7470A	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 7470A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 7470A	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Method 245.5	Method 7471A	Not Applicable	Not Applicable
	Soil	Method 245.5	Method 7471A	Method CLP	Not Applicable

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Aluminum	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	6020
Antimony	Water	Not Applicable	Method 3005A or 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Arsenic	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Not Applicable	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Barium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	ICP Trace, 6020
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Beryllium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	6020
Boron	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	Not Applicable

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Boron (continued)	Soil	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	Not Applicable
Calcium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	6020
Cadmium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	ICP Trace, 6020
Cobalt	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Cobalt (continued)	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Chromium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Copper	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Iron	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Iron (continued)	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	6020
Lead	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	ICP Trace, 6020
Magnesium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	6020
Manganese	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Manganese (continued)	Liquid	Not Applicable	Method 3010A or Method 3050B + Method 6010B	Not Applicable	ICP Trace, 200.8, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace, 6020
Molybdenum	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Not Applicable	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
Nickel	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 601B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	ICP Trace, 6020

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Potassium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	6020
Selenium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Not Applicable	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
Silicon	Water	Not Applicable	Not Applicable	Not Applicable	Method 3005A or Method 3010A + Method 6010B
	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 3005A or Method 3010A + Method 6010B
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Method 3010A + Method 6010
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 3050B+ Method 6010B

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Silicon (continued)	Soil	Not Applicable	Not Applicable	Not Applicable	Method 3050B + Method 6010B
Silver	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	CLP Method	ICP Trace. 200.8. 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace. 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge Solids Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace. 6020
	Soil	Not Applicable	Method 3050B+ Method 6010B	Method CLP	ICP Trace. 6020
Sodium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	200.8. 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge. Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	6020
Tin	Water	Not Applicable	Not Applicable	Not Applicable	Method 3005A or Method 3010A + Method 6010B. ICP Trace. or 200.8
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Method 3010A + Method 6010B

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Methods			
		NPDES	RCRA (SW846)	CLP	Other
Tin (continued)	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 3010A or Method 3050B – ICP Trace. Method 6010B. or 6020
	Domestic Waste Industrial Waste Sludge. Solids. Sediment	Not Applicable	Not Applicable	Not Applicable	Method 3010A – Method 6010B. ICP Trace. or 6020
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 3050B – Method 6010B. ICP Trace. or 6020
Thallium	Water	Not Applicable	Not Applicable	Not Applicable	Method 3005A or Method 3010A – Method 6010B. ICP Trace. or 200.8
	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 3005A or Method 3010A – Method 6010B. ICP Trace. or 6020
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Method 3010A – Method 6010B
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Not Applicable	Not applicable	Method 3050B – Method 6010B. ICP Trace. or 6020
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 3050B – Method 6010B. ICP Trace or 6020
Titanium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Not Applicable	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B+ Method 6010B	Not Applicable	ICP Trace. 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable

TABLE 4-3
SACRAMENTO LABORATORY
Inorganic ICAP Metals Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Titanium (continued)	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B+ Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010	Not Applicable	ICP Trace, 6020
Vanadium	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	ICP Trace, 6020
Zinc	Water	Not Applicable	Method 3005A or Method 3010A + Method 6010B	Method CLP	ICP Trace, 200.8, 6020
	Liquid	Not Applicable	Method 3010A or Method 3050B + Method 6010B	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3010A + Method 6010B	Not Applicable	Not Applicable
	Domestic Waste Industrial Waste Sludge, Solids, Sediment	Method 200.7[2]	Method 3050B + Method 6010B	Not Applicable	ICP Trace, 6020
	Soil	Not Applicable	Method 3050B + Method 6010B	Method CLP	ICP Trace, 6020
Metals by ICPMS	Water	200.8	3005M + 6020	Not Applicable	Not Applicable
	Liquid	Not Applicable	3005M + 6020	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	3005M + 6020	Not Applicable	Not Applicable
	Domestic waste, Industrial waste, Sludge, Solids, Sediment	200.8	3005M or 3050B Modified + 6020	Not Applicable	Not Applicable
	Soil	Not Applicable	3050B Modified +6020	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Volatiles by GC/MS	Water	Not Applicable	Method 5030B + Method 8260B	Method CLP	Method 524.2[1]
	Liquid	Not Applicable	Method 5030B or 3585 + Method 8260B	Not Applicable	Direct Aqueous Injection
	TCLP Leachate	Not Applicable	Method 5030B + Method 8260B	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 5030B or 5035 + Method 8260B	Not Applicable	Method 5030A + Method 8260B
	Soil	Not Applicable	Method 5035 + Method 8260B	Method CLP	Method 5030A + Method 8260B
Halogenated Volatiles by GC	Water	Not Applicable	Method 5030B + Method 8021	Not Applicable	Method 5030A + Method 8010
	Liquid	Not Applicable	Method 5030B or 3585 + Method 8021	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 5030B + Method 8021	Not Applicable	Method 5030A + Method 8010
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 5030B or 5035 + Method 8021	Not Applicable	Method 5030A + method 8010
	Soil	Not Applicable	Method 5035 + Method 8021	Not Applicable	Method 5030A + 8010
Aromatic Volatiles by GC	Water	Not Applicable	Method 5030B + Method 8021	Not Applicable	Method 5030A + Method 8020
	Liquid	Not Applicable	Method 5030B or 3585 + Method 8021	Not Applicable	Method 5030A + Method 8020

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Aromatic Volatiles by GC (continued)	TCLP Leachate	Not Applicable	Method 5030B + Method 8021	Not Applicable	Method 5030A + Method 8020
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 5030B or 5035 + Method 8021	Not Applicable	Method 5030A + 8020
	Soil	Not Applicable	Method 5035 + Method 8021	Not Applicable	Method 5030A + 8020
Semivolatiles by GC/MS	Water	Not Applicable	Method 3510C or Method 3520C + Method 8270C	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3580A + Method 8270C	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3510C or Method 3520C + Method 8270C	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 3540C or Method 3550B + Method 8270C	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3540C or Method 3550B + Method 8270C	Method CLP	Not Applicable
Pesticides by GC	Water	Not Applicable	Method 3510C or Method 3520C + Method 8081A	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3580A + Method 8081A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3510C or Method 3520C + Method 8081A	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 3540C or Method 3550B + Method 8081A	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Pesticides by GC (continued)	Soil	Not Applicable	Method 3540C or Method 3550B + Method 8081A	Method CLP	Not Applicable
PCBs by GC	Water	Not Applicable	Method 3510C, 3520C + Method 8082	Method CLP	Not Applicable
	Liquid	Not Applicable	Method 3580A + Method 8082	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 3510C, 3520C + Method 8082	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 3540C, 3550B + Method 8082	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3540C, 3550B + Method 8082	Method CLP	Not Applicable
Pesticides (Organo-phosphorus) by GC	Water	Not Applicable	Method 3510C or Method 3520C + Method 8141A	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 3580 + Method 8141 or 8141A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 3540C or Method 3550B + Method 8141A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3540C or Method 3550B + Method 8141A	Not Applicable	Not Applicable
PAHs by HPLC	Water	Not Applicable	Method 3510C or Method 3520C + Method 8310	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 3580A + Method 8310	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
PAHs by HPLC (continued)	Domestic Waste, Industrial Waste, Sludge, Solids, Sediments	Not Applicable	Method 3540C or Method 3550B + Method 8310	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3540C or Method 3550B + Method 8310	Not Applicable	Not Applicable
Herbicides by GC	Water	Not Applicable	Method 8151A	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 8151A	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Method 8151A	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 8151A	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 8151A	Not Applicable	Not Applicable
Total Petroleum Hydrocarbons by IR	Water	Method 418.1	Method 9070 modified	Not Applicable	Standard Method 5520
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Standard Method 5520
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 9071 modified	Not Applicable	Standard Method 5520
	Soil	Not Applicable	Method 9071 modified	Not Applicable	Not Applicable
Total Petroleum Hydrocarbons (gasoline range) by GC	Water	Not Applicable	Method 5030B + Method 8015 modified	Not Applicable	8015AZ Alaska GRO
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solids, Sediment	Not Applicable	Method 5030B + Method 8015 modified	Not Applicable	8015AZ Alaska GRO

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Total Petroleum Hydrocarbons (gas range) by GC (continued)	Soil	Not Applicable	Method 5030B + Method 8015 modified	Not Applicable	8015AZ Alaska GRO
Total Petroleum Hydrocarbons (diesel range) by GC	Water	Not Applicable	Method 3510C or 3520C + Method 8015 modified	Not Applicable	8015AZ Alaska DRO
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste Sludge, Solids, Sediment	Not Applicable	Method 3510C, 3540C, 3550B + Method 8015 modified	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 3550B + Method 8015 modified	Not Applicable	8015AZ Alaska DRO
Adsorbable Organic Halides (AOX)	Water	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 1650A
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 1650A
California Waste Extraction Test (Citrate Buffer or Deionized Water Leach)	Water	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
California Waste Extraction Test	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Title 22, California Code of Regulations
(Citrate Buffer or Deionized Water Leach) (continued)	Soil	Not Applicable	Not Applicable	Not Applicable	Title 22, California Code of Regulations
Dioxins and Furans (Low Resolution)	Water	Not Applicable	Method 8280A	Method CLP	Method 8280
	Liquid	Not Applicable	Method 8280A	Method CLP	Method 8280
	TCLP Leachate	Not Applicable	Method 8280A	Not Applicable	Method 8280
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 8280A	Method CLP	Method 8280
	Soil	Not Applicable	Method 8280A	Method CLP	Not Applicable
Dioxins and Furans (High Resolution)	Water	Method 1613B	Method 8290	Not Applicable	Method 1613A, 613 Modified, NCASI 551
	Liquid	Not Applicable	Method 8290	Not Applicable	CARB 429[6] Method 23[6] Method 0023A[6]
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Method 8290	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 8290	Not Applicable	NCASI 551
Explosives	Water	Not Applicable	Method 8330	Not Applicable	Method 8321
	Liquid	Not Applicable	Method 8330	Not Applicable	Method 8321
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Explosives (continued)	Domestic Waste, Industrial Waste, Sludge Solid, Sediment	Not Applicable	Method 8330	Not Applicable	Method 8321
	Soil	Not Applicable	Method 8330	Not Applicable	Method 8321
Chemical Warfare Materiels) (Degradants)	Water	Not Applicable	Method 8321 and/or Method 8270 Modified	Not Applicable	Not Applicable
	Liquid	Not Applicable	Method 8321 and/or Method 8270 Modified	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge Solid, Sediment	Not Applicable	Method 8321 and/or Method 8270 Modified	Not Applicable	Not Applicable
	Soil	Not Applicable	Method 8321 and/or Method 8270 Modified	Not Applicable	Not Applicable
Hexavalent Chromium	Water	Method 218.4	Method 7196	Not Applicable	Not Applicable
	Liquid	Not Applicable	Not Applicable	Not Applicable	CARB 425[6]
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 7196[3]
Tributyltin	Water	Not Applicable	Not Applicable	Not Applicable	Batelle Method Modified
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Not Applicable

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Tributyltin (continued)	Soil	Not Applicable	Not Applicable	Not Applicable	Batelle Method Modified
PCBs by HRGC/HRMS	Water	Not Applicable	Not Applicable	Not Applicable	Method 1668
	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 1668
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 1668
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 1668
2,3,4,6-Tetrachloro-phenols, Pentachloro-phenol	Water	Not Applicable	Not Applicable	Not Applicable	Method 8151A Modified
	Liquid	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicalbe
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 8151A Modified
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 8151A Modified

TABLE 4-4
SACRAMENTO LABORATORY
Organic Methods
(Continued)

Analytical Parameters	Matrix	Method			
		NPDES	RCRA (SW846)	CLP	Other
Chlorinated Phenols by HRGC/HRMS	Water	Not Applicable	Not Applicable	Not Applicable	Method 1653
	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 1653
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 1653
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 1653
Organosulfur Chemical Warfare Degradates by GCMS	Water	Not Applicable	Not Applicable	Not Applicable	Method 8270 Modified
	Liquid	Not Applicable	Not Applicable	Not Applicable	Method 8270 Modified
	TCLP Leachate	Not Applicable	Not Applicable	Not Applicable	Not Applicable
	Domestic Waste, Industrial Waste, Sludge, Solid, Sediment	Not Applicable	Not Applicable	Not Applicable	Method 8270 Modified
	Soil	Not Applicable	Not Applicable	Not Applicable	Method 8270 Modified

Footnotes

(1) Automated titrator used for this analysis.

(2) Without preliminary distillation. Data generated by the WSAC procedure may not be used for NPDES compliance monitoring without performing an initial distillation study for a specific client's matrix. See 40CFR Part 136, Table 1B Footnotes for specifics. It is the responsibility of the client to notify the laboratory on how this information is to be used.

(3) Samples may be analyzed for this parameter following a 1 hour deionized water leach.

(4) Includes drinking, surface and saline waters, aqueous domestic and industrial wastes and acid rain.

(5) Includes drinking and other waters wherein the carbonaceous matter is either soluble or has a particle size of 0.2 mm or less. Homogenizing a sample to reduce the particle size may cause loss of purgable organic carbon, thus yielding erroneously low results.

(6) Includes air trains, impinger solutions, or other air source sampling collection media defined in the referenced method.

Facility Appendix
Sacramento Laboratory

Section Sacramento-5

MDLs and RLs

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TABLE 5-1
SACRAMENTO LABORATORY
6010B ICAP Metals
Method Detection Limits (MDL) and
Reporting Limits (RL)

Element	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Aluminum	7429-90-5	2.4	20	43	200	(3/98)/(4/98)
Antimony	7440-36-0	2.2	6.0	31	60	(3/98)/(4/98)
Arsenic	7440-38-2	3.1	30	43	300	(3/98)/(4/98)
Barium	7440-39-3	0.04	20	0.43	200	(3/98)/(4/98)
Beryllium	7440-41-7	0.01	0.5	0.09	5.0	(3/98)/(4/98)
Boron	7440-42-8	0.40	20	11	200	(3/98)/(4/98)
Cadmium	7440-43-9	0.44	0.5	3.1	5.0	(3/98)/(4/98)
Calcium	7440-70-2	1.2	500	27	5000	(3/98)/(4/98)
Chromium	7440-47-3	0.27	1.0	2.8	10	(3/98)/(4/98)
Cobalt	7440-48-4	0.89	5.0	7.4	50	(3/98)/(4/98)
Copper	7440-50-8	0.39	2.5	2.1	25	(3/98)/(4/98)
Iron	7439-89-6	0.09	10	3.9	100	(3/98)/(4/98)
Lead	7439-92-1	2.2	10	31	100	(3/98)/(4/98)
Magnesium	7439-95-4	1.8	500	25	5000	(3/98)/(4/98)
Manganese	7439-96-5	0.30	1.5	0.69	15	(3/98)/(4/98)
Molybdenum	7439-98-7	0.51	4.0	4.6	40	(3/98)/(4/98)
Nickel	7440-02-0	1.8	4.0	16	40	(3/98)/(4/98)
Phosphorus	7723-14-0	12	30	120	300	(3/98)/(4/98)
Potassium	7440-09-7	103	500	600	5000	(3/98)/(4/98)
Selenium	7782-49-2	7.5	25	51	250	(3/98)/(4/98)
Lithium	7439-93-2	0.23	5.0	2.6	50	(3/98)/(4/98)
Silicon	7440-21-3	1.8	50	5.0	500	(3/98)/(4/98)
Silver	7440-22-4	0.20	1.0	3.2	10	(3/98)/(4/98)
Sodium	7440-23-5	2.8	500	36	5000	(3/98)/(4/98)
Strontium	7440-24-6	0.02	5.0	0.33	50	(3/98)/(4/98)
Sulfur	7704-24-9	3.8	10	35	100	(3/98)/(4/98)
Thallium	7440-28-0	7.1	200	53	2000	(3/98)/(4/98)
Tin	7440-31-5	2.9	10	22	100	(3/98)/(4/98)
Titanium	7440-32-6	0.25	5.0	1.7	50	(3/98)/(4/98)
Vanadium	7440-62-2	0.25	5.0	3.2	50	(3/98)/(4/98)
Zinc	7440-66-6	0.40	2.0	2.1	20	(3/98)/(4/98)

TABLE 5-2
SACRAMENTO LABORATORY
6010B ICP Trace Metals
Method Detection Limits (MDL) and
Reporting Limits (RL)

Element	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Antimony	7440-36-0	0.16	1.0	2.2	10	(3/98)/(3/98)
Arsenic	7440-38-2	0.28	1.0	4.2	10	(3/98)/(3/98)
Barium	7440-39-3	0.02	1.0	0.14	10	(3/98)/(2/97)
Beryllium	7440-41-7	0.01	0.5	0.05	5.0	(3/98)/(3/98)
Cadmium	7440-43-9	0.03	0.5	0.37	2.0	(3/98)/(3/98)
Chromium	7440-47-3	0.08	0.5	0.51	5.0	(3/98)/(3/98)
Cobalt	7440-48-4	0.09	5.0	0.88	50	(3/98)/(3/98)
Copper	7440-50-8	0.09	2.5	0.62	25	(3/98)/(3/98)
Lead	7439-92-1	0.15	0.3	1.8	3.0	(3/98)/(3/98)
Manganese	7439-96-5	0.01	1.5	0.47	15	(3/98)/(3/98)
Molybdenum	7439-98-7	0.16	4.0	1.5	40	(3/98)/(3/98)
Nickel	7440-02-0	0.07	4.0	1.2	40	(3/98)/(3/98)
Selenium	7782-49-2	0.29	0.5	3.2	5.0	(3/98)/(3/98)
Silver	7440-22-4	0.11	0.5	0.99	5.0	(3/98)/(3/98)
Thallium	7440-28-0	0.39	1.0	3.0	10	(3/98)/(3/98)
Vanadium	7440-62-2	0.04	5.0	0.89	50	(3/98)/(3/98)
Zinc	7440-66-6	0.06	2.0	2.4	20	(3/98)/(3/98)

TABLE 5-3
SACRAMENTO LABORATORY
6020 ICP/MS Metals
Method Detection Limits (MDL) and
Reporting Limits (RL)

Element	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Aluminum	7429-90-5	0.16	5.0	22	50	(3/98)/(6/98)
Antimony	7440-36-0	0.01	0.20	0.16	2.0	(6/98)/(6/98)
Arsenic	7440-38-2	0.08	0.20	0.41	2.0	(6/98)/(6/98)
Barium	7440-39-3	0.04	0.10	0.43	1.0	(6/98)/(6/98)
Beryllium	7440-41-7	0.01	0.10	0.11	1.0	(6/98)/(6/98)
Cadmium	7440-43-9	0.01	0.10	0.10	1.0	(6/98)/(6/98)
Calcium	7440-70-2	0.84	5.0	9.5	50	(6/98)/(3/98)
Chromium	7440-47-3	0.047	0.10	0.35	1.0	(6/98)/(6/98)
Cobalt	7440-48-4	0.01	0.10	0.10	1.0	(6/98)/(6/98)
Copper	7440-50-8	0.011	0.10	0.15	1.0	(6/98)/(3/98)
Iron	7439-89-6	1.1	5.0	3.5	50	(6/98)/(6/98)
Lead	7439-92-1	0.01	0.10	0.15	1.0	(6/98)/(6/98)
Magnesium	7439-95-4	0.11	5.0	1.6	50	(6/98)/(6/98)
Manganese	7439-96-5	0.01	0.10	0.14	1.0	(6/98)/(6/98)
Molybdenum	7439-98-7	0.01	0.10	0.10	1.0	(6/98)/(6/98)
Nickel	7440-02-0	0.01	0.10	0.12	1.0	(6/98)/(6/98)
Potassium	7440-09-7	0.5	5.0	2.4	50	(6/98)/(6/98)
Selenium	7782-49-2	0.025	0.20	0.12	2.0	(3/98)/(3/98)
Silver	7440-22-4	0.01	0.10	0.10	1.0	(6/98)/(6/98)
Sodium	7440-23-5	0.68	5.0	16	50	(6/98)/(6/98)
Titanium	7440-28-0	0.019	0.10	0.39	1.0	(3/98)/(3/98)
Thallium	7440-28-0	0.036	0.10	0.10	1.0	(6/98)/(6/98)
Tin	7440-31-5	0.1	1.0	0.34	10	(3/98)/(6/98)
Vanadium	7440-62-2	0.43	1.0	0.34	10	(3/98)/(6/98)
Zinc	7440-66-6	0.03	0.20	1.1	2.0	(3/98)/(6/98)

TABLE 5-4
SACRAMENTO LABORATORY
GFAA Metals
Method Detection Limits (MDL) and
Reporting Limits (RL)

Element	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Antimony	7440-36-0	0.27	1.0	2.4	10	(3/98)/(9/97)
Arsenic	7440-38-2	0.24	1.0	1.1	5.0	(3/98)/(9/97)
Cadmium	7440-43-9	0.016	0.1	0.13	0.50	(3/98)/(9/97)
Chromium	7440-47-3	0.05	0.5	0.40	1.0	(3/98)/(9/97)
Copper	7440-50-8	0.098	0.5	0.54	1.0	(3/98)/(9/97)
Lead	7439-92-1	0.093	0.3	1.2	5.0	(3/98)/(9/97)
Nickel	7440-02-0	0.16	0.5	1.2	5.0	(3/98)/(9/97)
Selenium	7782-49-2	0.17	0.5	2.4	5.0	(3/98)/(9/97)
Silver	7440-22-4	0.015	0.1	0.27	0.50	(3/98)/(9/97)
Thallium	7440-28-0	0.21	1.0	1.9	5.0	(3/98)/(9/97)

TABLE 5-5
SACRAMENTO LABORATORY
Mercury by CVAA
Method Detection Limits (MDL) and
Reporting Limits (RL)

Element	CAS	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Mercury Leeman	7439-97-6	0.005	0.04	0.013	0.2	(1/98)/(10/97)

TABLE 5-6
SACRAMENTO LABORATORY
General Chemistry Parameters
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	Method	CAS Number	Water MDL (mg/L)	Water RL (mg/L)	Date of MDL
Alkalinity (Total)	E310.1	477520-60-0	0.5	5.0	1/98
Ammonia[1]	E350.1	310-90-0	0.01	0.1	2/98
Bromide (by IC)	E300	28-20-0	0.05	0.5	2/98
Chemical Oxygen Demand	E410.4	1-00-4	8.3	10	9/97
Chloride (by IC)	E300	1-00-3	0.16	1.0	2/98
Cyanide (water)	335.2/335.3	5955-70-0	0.002	0.01	9/97
Cyanide (soil.mg/kg)	335.2/335.3	5955-70-0	0.13	0.50	11/97
Fluoride (by IC)	E300	66-30-0	0.068	0.5	2/98
Fluoride (electrode)[1]	E340.2	66-30-0	0.014	0.1	9/97
Nitrate (by IC)	E300	25-90-0	0.036	0.05	10/97
Nitrite (by IC)	E300	15-90-0	0.022	0.05	10/97
Orthophosphate (by IC)	E300	226750-80-0	0.045	0.2	10/97
Phenolics (water)	E420.2/ SW9066	54-30-0	0.008	0.01	9/97
Phenolics (soil, mg/kg)	E420.2/ SW9066	54-30-0	0.20	0.50	1/98
Sulfate	E375.4	3-03-5	0.23	5.0	1/98
Sulfate (by IC)	E300	3-03-5	0.49	1.0	10/97
Sulfide	E376.2	1055-70-0	0.014	0.05	10/97
Total Kjeldahl Nitrogen	E351.2	5228003-90-0	0.085	0.5	9/97
Total Organic Carbon (water)	415.1	1-01-2	0.05	0.5	9/97
Total Organic Carbon-(soil, mg/kg)	415.1	1-01-2	24	100	5/97
Total Organic Halogen	SW9020B	527650-80-0	0.0045	0.03	8/97

[1] This method is not for NPDES.

TABLE 5-7
SACRAMENTO LABORATORY
Modified 8015 for Gasoline and Diesel Range Organics
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Gasoline (by purge & trap)	39-40-0	0.02	1.00	0.04	50	(4/98)/(3/98)
Diesel (by extraction)	68334-30-5	0.50	1.00	14	50	(8/97)/(2/98)
Motor Oil	74-30-0	0.73	5.00	28	250	(8/97)/(2/98)
JP4 (Aviation Fuel)	8208-90-0	0.54	1.00	25	50	(8/97)/(8/97)

TABLE 5-8
SACRAMENTO LABORATORY
1653 Chlorinated Phenolics
Method Detection Limit (MDL) and
Reporting Limits (RL)

Analyte	Water MDL (ug/L)	Water RL (ug/L)	Date of MDL
2,4,6-Trichlorophenol	0.81	2.5	12/97
2,4,5-Trichlorophenol	0.96	2.5	12/97
2,3,4,6-Tetrachlorophenol	0.89	2.5	12/97
3,4,6-Trichloroguaiacol	0.70	2.5	12/97
3,4,5-Trichloroquaiacol	1.4	2.5	12/97
4,5,6-Trichloroquaiacol	0.60	2.5	12/97
3,4,6-Trichlorocatechol	1.4	5.0	12/97
3,4,5-Trichlorocatechol	0.97	5.0	12/97
Pentachlorophenol	2.6	5.0	12/97
Tetrachloroquaiacol	1.7	5.0	12/97
Trichlorsyringol	1.7	2.5	12/97
Tetrachlorocatechol	2.1	5.0	12/97

TABLE 5-9
SACRAMENTO LABORATORY
8330 Nitroaromatics and Nitramines
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (µg/kg)	Soil RL (µg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
HMX	2691-41-0	0.029	0.066	0.037	1.0	(9/97)/(9/97)
1,3,5-Trinitrobenzene (TNB)	99-35-4	0.023	0.074	0.036	0.3	(9/97)/(9/97)
Cyclotrimethylenetrinitramine (RDX)	121-82-4	0.054	0.141	0.035	0.8	(9/97)/(9/97)
1,3-Dinitrobenzene (DN)	99-65-0	0.030	0.047	0.036	0.1	(9/97)/(9/97)
Nitrobenzene (NB)	98-95-3	0.037	0.041	0.045	1.0	(9/97)/(9/97)
2,4,6-Trinitrotoluene (TNT)	118-96-7	0.032	0.059	0.025	0.1	(9/97)/(9/97)
Tetryl	479-45-8	0.027	0.080	0.029	1.0	(9/97)/(9/97)
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	0.024	0.07	0.030	0.10	(9/97)/(9/97)
2,6-Dinitrotoluene (2,6-DNT)	606-20-2	0.039	0.146	0.036	0.30	(9/97)/(9/97)
2-Amino-4,6-Dinitrotoluene (2-AM-4,6-DNT)	35572-78-2	0.038	0.076	0.024	0.10	(9/97)/(9/97)
4-Amino-2,6-Dinitrotoluene (4-AM-2,6-DNT)	19406-51-0	0.055	0.082	0.030	0.10	(9/97)/(9/97)
2-Nitrotoluene (2-NT)	88-72-2	0.038	0.130	0.098	1.0	(9/97)/(9/97)
4-Nitrotoluene (4-NT)	99-99-0	0.050	0.224	0.092	1.0	(9/97)/(9/97)
3-Nitrotoluene (3-NT)	99-08-1	0.052	0.095	0.053	1.0	(9/97)/(9/97)

TABLE 5-10
SACRAMENTO LABORATORY
Nitrocellulose
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (mg/L)	Water RL (mg/L)	Date of MDL
Nitrocellulose	9004-70-0	0.276	2.00	0.367	0.450	(11/97)/(3/98)

TABLE 5-11
SACRAMENTO LABORATORY
8081A Organochlorine Pesticides
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (µg/kg)	Soil RL (µg/k)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
α-BHC	319-84-6	0.39	1.7	0.008	0.05	(5/98)/(5/98)
β-BHC	319-85-7	0.38	1.7	0.004	0.05	(5/98)/(5/98)
δ-BHC	319-86-8	0.44	1.7	0.006	0.05	(5/98)/(5/98)
γ-BHC (Lindane)	58-89-9	0.35	1.7	0.01	0.05	(5/98)/(5/98)
Heptachlor	76-44-8	0.38	1.7	0.007	0.05	(5/98)/(5/98)
Aldrin	309-00-2	0.36	1.7	0.006	0.05	(5/98)/(5/98)
Heptachlor Epoxide	1024-57-3	0.25	1.7	0.008	0.05	(5/98)/(5/98)
Dieldrin	60-75-1	0.51	3.4	0.02	0.10	(5/98)/(5/98)
Endrin	72-20-8	0.49	3.4	0.02	0.10	(5/98)/(5/98)
Endosulfan II	33213-65-9	0.72	3.4	0.02	0.10	(5/98)/(5/98)
4,4'-DDT	50-29-3	1.4	3.4	0.02	0.10	(5/98)/(5/98)
Methoxychlor	72-43-5	2.6	17	0.04	0.50	(5/98)/(5/98)
4,4'-DDE	72-55-9	0.63	3.4	0.015	0.10	(5/98)/(5/98)
Endrin Aldehyde	7421-93-4	1.16	3.4	0.029	0.10	(5/98)/(5/98)
Endosulfan sulfate	1031-07-8	0.82	3.4	0.033	0.10	(5/98)/(5/98)
Endrin Ketone	53494-70-5	0.79	1.7	0.024	0.05	(5/98)/(5/98)
Endosulfan I	959-98-8	0.38	3.4	0.010	0.05	(5/98)/(5/98)
4,4'-DDD	72-54-8	0.71	3.4	0.005	0.10	(5/98)/(5/98)
α-Chlordane	5103-71-9	0.31	1.7	0.007	0.05	(5/98)/(5/98)
γ-Chlordane	5103-74-2	0.32	1.7	0.008	0.05	(5/98)/(5/98)
Toxaphene	8001-35-2	56	67	1.4	2.0	(5/98)/(5/98)

Table 5-12
SACRAMENTO LABORATORY
8082 Aroclors
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (µg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Aroclor-1016	12674-11-2	1.9	17	0.21	1.0	(5/98)/(5/98)
Aroclor-1221	11104-28-2	1.9	17	0.37	1.0	(5/98)/(5/98)
Aroclor-1232	11141-16-5	1.9	17	0.37	1.0	(5/98)/(5/98)
Aroclor 1242	53469-21-9	1.9	17	0.37	1.0	(5/98)/(5/98)
Aroclor-1248	12672-29-6	1.9	17	0.37	1.0	(5/98)/(5/98)
Aroclor-1254	27323-18-8	1.9	17	0.37	1.0	(5/98)/(5/98)
Aroclor-1260	11096-82-5	1.7	17	0.37	1.0	(5/98)/(5/98)

TABLE 5-13
SACRAMENTO LABORATORY
8150 Chlorinated Herbicides
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
2,4-Dichlorophenoxyacetic acid (2,4-D)	94-75-7	1.540	25.0	0.215	0.25	(2/97)/(2/97)
2,4-Dichlorophenoxybutyric acid (2,4-DB)	94-82-6	1.750	100	0.063	1.0	(2/97)/(2/97)
2-(2,4,5-Trichlorophenoxy)-propanoic acid (2,4,5-TP (Silvex))	93-72-1	0.377	5.0	0.043	0.050	(2/97)/(2/97)
2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)	93-76-5	0.461	5.0	0.047	0.050	(2/97)/(2/97)
Methylchlorophenoxyacetic acid (MCPA)	94-74-6	427.82	5000	3.34	50	(2/97)/(2/97)
Methyl-4-chlorophenoxy propionic acid (MCPP)	7085-19-0	139.81	5000	4.46	50	(2/97)/(2/97)
4,6-Dinitro-o-sec-butyl phenol (Dinoseb)	088-85-7	2.615	25.0	0.250	0.6	(2/97)/(2/97)
2,2-Dichloropropionic acid (Dalapon)	75-99-0	2.874	100	0.027	5.0	(2/97)/(2/97)
Dichloroprop	120-36-5	1.603	25.0	0.062	0.25	(2/97)/(2/97)
Dicamba	1918-00-9	0.719	10.0	0.065	0.10	(2/97)/(2/97)

TABLE 5-14
SACRAMENTO LABORATORY
8310 Polynuclear Aromatic Hydrocarbons
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (µg/kg)	Soil RL (µg/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Naphthalene	91-20-3	63.4	200	0.57	2.0	(4/98)/(5/97)
Acenaphthylene	208-96-8	73.3	200	0.14	2.0	(4/98)/(5/97)
Acenaphthene	83-32-9	146	400	0.32	2.0	(4/98)/(5/97)
Fluorene	86-73-7	15	40	0.033	0.2	(4/98)/(5/97)
Phenanthrene	85-01-8	5.6	16	0.011	0.6	(4/98)/(5/97)
Anthracene	120-12-7	3.6	8.0	0.006	0.7	(4/98)/(5/97)
Fluoranthene	206-44-0	9.9	20	0.011	0.2	(4/98)/(5/97)
Pyrene	129-00-0	19	40	0.020	0.3	(4/98)/(5/97)
Benzo(a)anthracene	56-55-3	8.3	16	0.012	0.080	(4/98)/(5/97)
Chrysene	218-01-9	8.0	20	0.012	0.2	(4/98)/(5/97)
Benzo(b)fluoranthene	205-99-2	2.4	4.0	0.011	0.020	(4/98)/(5/97)
Benzo(k)fluoranthene	207-08-9	3.6	4.0	0.005	0.020	(4/98)/(5/97)
Benzo(a)pyrene	50-32-8	7.5	10	0.011	0.050	(4/98)/(5/97)
Dibenz(a,h)anthracene	53-70-3	32	40	0.061	0.2	(4/98)/(5/97)
Benzo(g,h,i)perylene	191-24-2	11	16	0.034	0.080	(4/98)/(5/97)
Indeno(1,2,3-cd)pyrene	193-39-5	7.9	20	0.028	0.2	(4/98)/(5/97)

TABLE 5-15
SACRAMENTO LABORATORY
5030/5035/8260B (25 mL Purge) Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Low Level Soil MDL (ug/kg)	Soil RL (µg/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Benzene	71-43-2	0.73	5.0	421	625	0.13	1.0	(7/98)/(6/98)/(5/98)
Bromobenzene	108-86-1	0.52	5.0	37	625	0.18	1.0	(7/98)/(3/98)/(5/98)
Bromochloromethane	74-97-5	0.94	5.0	442	625	0.31	1.0	(7/98)/(6/98)/(4/98)
Bromodichloromethane	75-27-4	0.53	5.0	376	625	0.14	1.0	(7/98)/(6/98)/(5/98)
Bromoform	75-25-2	4.1	5.0	34	625	0.10	1.0	(7/98)/(3/98)/(4/98)
Bromomethane	74-83-9	0.86	5.0	125	625	0.08	1.0	(7/98)/(6/98)/(4/98)
n-Butylbenzene	104-51-8	0.66	5.0	222	625	0.12	1.0	(7/98)/(6/98)/(5/98)
sec-Butylbenzene	135-98-8	0.75	5.0	189	625	0.12	1.0	(7/98)/(6/98)/(5/98)
t-Butylbenzene	98-06-6	0.54	5.0	149	625	0.14	1.0	(7/98)/(6/98)/(5/98)
Carbon Tetrachloride	56-23-5	0.53	5.0	474	625	0.15	1.0	(7/98)/(6/98)/(5/98)
Chlorobenzene	108-90-7	0.79	5.0	96	625	0.12	1.0	(7/98)/(6/98)/(5/98)
Chloroethane	75-00-3	2.6	5.0	127	625	0.34	1.0	(7/98)/(3/98)/(5/98)
Chloroform	67-66-3	0.75	5.0	400	625	0.72	1.0	(7/98)/(6/98)/(4/98)
Chloromethane	74-87-3	1.5	5.0	374	625	0.25	1.0	(7/98)/(6/98)/(5/98)
2-Chlorotoluene	95-49-8	0.62	5.0	27	625	0.26	1.0	(7/98)/(3/98)/(4/98)
4-Chlorotoluene	106-43-4	0.86	5.0	46	625	0.10	1.0	(7/98)/(3/98)/(5/98)
1,2-Dibromo-3-Chloropropane	96-12-8	7.2	10.0	133	625	0.95	5.0	(7/98)/(6/98)/(4/98)
Dibromochloromethane	124-48-1	2.7	5.0	167	625	0.40	1.0	(7/98)/(6/98)/(5/98)
1,2-Dibromoethane	106-93-4	0.79	5.0	161	625	0.22	1.0	(7/98)/(6/98)/(4/98)
Dibromomethane	74-95-3	0.58	5.0	360	625	0.21	1.0	(7/98)/(6/98)/(4/98)
1,2-Dichlorobenzene	95-50-1	0.64	5.0	145	625	0.14	1.0	(7/98)/(6/98)/(5/98)
1,3-Dichlorobenzene	541-73-1	0.75	5.0	34	625	0.11	1.0	(7/98)/(3/98)/(5/98)
1,4-Dichlorobenzene	106-46-7	0.78	5.0	163	625	0.13	1.0	(7/98)/(6/98)/(5/98)
Dichlorodifluoromethane	75-71-8	0.89	5.0	40	625	0.16	1.0	(7/98)/(3/98)/(5/98)
1,1-Dichloroethane	75-34-3	0.76	5.0	394	625	0.10	1.0	(7/98)/(6/98)/(5/98)
1,2-Dichloroethane	107-06-2	0.73	5.0	396	625	0.22	1.0	(7/98)/(6/98)/(4/98)
cis-1,2-Dichloroethene	156-59-4	0.89	5.0	394	625	0.10	1.0	(7/98)/(6/98)/(5/98)
trans-1,2-Dichloroethene	156-60-5	0.91	5.0	391	625	0.11	1.0	(7/98)/(6/98)/(5/98)

TABLE 5-15
SACRAMENTO LABORATORY
5030/5035/8260B (25 mL Purge) Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS	Low Level Soil	Soil RL (ug/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
1,1-Dichloroethene	75-35-4	1.2	5.0	433	625	0.36	1.0	(7/98)/(6/98)/(5/98)
1,2-Dichloropropane	78-87-5	0.60	5.0	372	625	0.15	1.0	(7/98)/(6/98)/(5/98)
1,3-Dichloropropane	142-28-9	0.57	5.0	96	625	0.20	1.0	(7/98)/(3/98)/(4/98)
2,2-Dichloropropane	590-20-7	1.1	5.0	76	625	0.14	1.0	(7/98)/(3/98)/(5/98)
cis-1,3-Dichloropropene	10061-01-5	0.64	5.0	363	625	0.22	1.0	(7/98)/(6/98)/(4/98)
trans-1,3-Dichloropropene	10061-02-6	0.75	5.0	390	625	0.30	1.0	(7/98)/(6/98)/(4/98)
1,1-Dichloropropene	563-58-6	0.86	5.0	478	625	0.14	1.0	(7/98)/(6/98)/(4/98)
Ethylbenzene	100-41-4	0.86	5.0	143	625	0.27	1.0	(7/98)/(6/98)/(5/98)
Hexachlorobutadiene	87-68-3	0.89	5.0	264	625	0.22	1.0	(7/98)/(6/98)/(4/98)
Isopropylbenzene	98-82-8	0.52	5.0	144	625	0.12	1.0	(7/98)/(6/98)/(5/98)
p-Isopropyltoluene	99-87-6	0.63	5.0	186	625	0.13	1.0	(7/98)/(6/98)/(5/98)
Methylene Chloride	75-09-2	0.84	5.0	404	625	0.35	1.0	(7/98)/(6/98)/(5/98)
Naphthalene	91-20-3	0.63	5.0	220	625	0.15	1.0	(7/98)/(6/98)/(5/98)
n-Propylbenzene	103-65-1	0.90	5.0	194	625	0.15	1.0	(7/98)/(6/98)/(5/98)
Styrene	100-42-5	0.76	5.0	145	625	0.15	1.0	(7/98)/(6/98)/(5/98)
1,1,1,2-Tetrachloroethane	630-20-6	3.0	5.0	133	625	0.10	1.0	(7/98)/(6/98)/(5/98)
1,1,2,2-Tetrachloroethane	79-34-5	0.68	5.0	44	625	0.37	1.0	(7/98)/(3/98)/(5/98)
Tetrachloroethene	127-18-4	0.61	5.0	148	625	0.38	1.0	(7/98)/(6/98)/(5/98)
Toluene	108-88-3	0.61	5.0	369	625	0.25	1.0	(7/98)/(6/98)/(4/98)
1,2,3-Trichlorobenzene	87-61-6	0.75	5.0	260	625	0.14	1.0	(7/98)/(6/98)/(4/98)
1,2,4-Trichlorobenzene	120-82-1	0.75	5.0	133	625	0.23	1.0	(7/98)/(6/98)/(4/98)
1,1,1-Trichloroethane	71-55-6	0.80	5.0	412	625	0.41	1.0	(7/98)/(6/98)/(5/98)
1,1,2-Trichloroethane	79-00-5	2.9	5.0	390	625	0.31	1.0	(7/98)/(6/98)/(4/98)
Trichloroethene	79-01-6	0.60	5.0	321	625	0.31	1.0	(7/98)/(6/98)/(5/98)
Trichlorofluoromethane	75-69-4	0.80	5.0	83	625	0.23	1.0	(7/98)/(3/98)/(4/98)
1,2,3-Trichloropropane	96-18-1	0.76	5.0	167	625	0.30	1.0	(7/98)/(6/98)/(4/98)
1,2,4-Trimethylbenzene	95-63-6	0.51	5.0	268	625	0.12	1.0	(7/98)/(6/98)/(5/98)
1,3,5-Trimethylbenzene	99-35-4	2.4	5.0	208	625	0.14	1.0	(7/98)/(6/98)/(5/98)
Vinyl Chloride	75-01-4	1.6	5.0	380	625	0.12	1.0	(7/98)/(6/98)/(5/98)

TABLE 5-15
SACRAMENTO LABORATORY
5030/5035/8260B (25 mL Purge) Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS	Low Level Soil	Soil RL (ug/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
m&p-Xylene	1330-20-7	0.81	5.0	104	625	0.18	1.0	(7/98)/(3/98)/(5/98)
ortho-Xylene	106-42-3	2.7	5.0	157	625	0.10	1.0	(7/98)/(6/98)/(5/98)

TABLE 5-16
SACRAMENTO LABORATORY
8010 Volatile Organics by GC
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Freon 12	75-71-8	0.36	1.0	0.34	5.0	(3/98)/(2/98)
Chloromethane	74-87-3	0.23	1.0	0.19	5.0	(3/98)/(2/98)
Vinyl Chloride	75-01-4	0.20	1.0	0.48	1.0	(3/98)/(2/98)
Bromomethane	74-83-9	0.21	1.0	0.10	5.0	(3/98)/(2/98)
Chloroethane	75-00-3	0.20	1.0	0.15	5.0	(3/98)/(2/98)
Freon 11	75-69-4	0.23	1.0	0.19	1.0	(3/98)/(2/98)
Freon 113	76-13-1	0.18	1.0	0.19	5.0	(3/98)/(2/98)
1,1-Dichloroethene	75-35-4	0.19	1.0	0.19	0.5	(3/98)/(2/98)
Methylene Chloride	75-09-2	0.25	1.0	0.14	5.0	(3/98)/(2/98)
trans-1,2-Dichloroethene	156-60-5	0.21	1.0	0.17	0.5	(3/98)/(2/98)
1,1-Dichloroethane	75-34-3	0.21	1.0	0.11	0.5	(3/98)/(2/98)
cis-1,2-Dichloroethene	156-59-2	0.22	1.0	0.17	0.5	(3/98)/(2/98)
Chloroform	67-66-3	0.33	1.0	0.16	0.5	(3/98)/(2/98)
1,1,1-Trichloroethane	71-55-6	0.21	1.0	0.15	0.5	(3/98)/(2/98)
Carbon Tetrachloride	56-23-5	0.21	1.0	0.16	0.5	(3/98)/(2/98)
1,2-Dichloroethane	107-06-2	0.23	1.0	0.09	1.0	(3/98)/(2/98)
Trichloroethene	79-01-6	0.22	1.0	0.13	0.5	(3/98)/(2/98)
1,2-Dichloropropane	78-87-5	0.24	1.0	0.14	0.5	(3/98)/(2/98)
Bromodichloromethane	75-27-4	0.20	1.0	0.19	1.0	(3/98)/(2/98)
2-Chloroethylvinylether	110-75-8	0.16	5.0	0.28	10	(3/98)/(2/98)
cis-1,3-Dichloropropene	10061-01-5	0.22	1.0	0.18	1.0	(3/98)/(2/98)
trans-1,3-Dichloropropene	10061-02-6	0.19	1.0	0.15	1.0	(3/98)/(2/98)
1,1,2-Trichloroethane	79-00-5	0.09	1.0	0.07	1.0	(3/98)/(2/98)
Tetrachloroethene	127-18-4	0.23	1.0	0.19	0.5	(3/98)/(2/98)
Dibromochloromethane	124-48-1	0.17	1.0	0.12	1.0	(3/98)/(2/98)
1,2-Dibromoethane	106-93-4	0.14	1.0	0.09	2.0	(3/98)/(2/98)
Chlorobenzene	108-90-7	0.22	1.0	0.13	2.0	(3/98)/(2/98)

TABLE 5-16
SACRAMENTO LABORATORY
8010 Volatile Organics by GC
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Bromoform	75-25-2	0.13	1.0	0.16	5.0	(3/98)/(2/98)
1,1,2,2-Tetrachloroethane	79-34-5	0.17	1.0	0.28	1.0	(3/98)/(2/98)
1,3-Dichlorobenzene	541-73-1	0.44	1.0	0.11	2.0	(3/98)/(2/98)
1,4-Dichlorobenzene	106-46-7	0.24	1.0	0.15	2.0	(3/98)/(2/98)
1,2-Dichlorobenzene	95-50-1	0.46	1.0	0.15	2.0	(3/98)/(2/98)

TABLE 5-17
SACRAMENTO LABORATORY
8020 Volatile Aromatics by GC
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Benzene	71-43-2	0.23	1.0	0.06	0.5	(3/98)/(3/98)
Toluene	108-88-3	0.37	1.0	0.07	0.5	(3/98)/(3/98)
Chlorobenzene	108-90-7	0.32	1.0	0.06	0.5	(3/98)/(3/98)
Ethylbenzene	100-41-4	0.36	1.0	0.07	0.5	(3/98)/(3/98)
m/p-Xylene	573-20-0	0.97	1.0	0.15	0.5	(3/98)/(3/98)
o-Xylene	95-47-6	0.37	1.0	0.08	0.5	(3/98)/(3/98)
1,3-Dichlorobenzene	541-73-1	0.34	1.0	0.05	1.0	(3/98)/(3/98)
1,4-Dichlorobenzene	106-46-7	0.39	1.0	0.06	1.0	(3/98)/(3/98)
1,2-Dichlorobenzene	95-50-1	0.31	1.0	0.07	1.0	(3/98)/(3/98)

TABLE 5-18
SACRAMENTO LABORATORY
8021 Volatile Aromatics and Halogens by GC
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Benzene	71-43-2	TBD	TBD	0.24	1.0	(6/98)
Toluene	108-88-3	TBD	TBD	0.07	1.0	(6/98)
Chlorobenzene	108-90-7	TBD	TBD	0.07	1.0	(6/98)
Ethylbenzene	100-41-4	TBD	TBD	0.04	1.0	(6/98)
m,p-Xylene	7816-60-0	TBD	TBD	0.11	1.0	(6/98)
o-Xylene	95-47-6	TBD	TBD	0.11	1.0	(6/98)
1,3-Dichlorobenzene	541-73-1	TBD	TBD	0.21	1.0	(6/98)
1,4-Dichlorobenzene	106-46-7	TBD	TBD	0.22	1.0	(6/98)
1,2-Dichlorobenzene	95-50-1	TBD	TBD	0.12	1.0	(6/98)
Dichlorodifluoromethane	75-71-8	TBD	TBD	0.24	1.0	(6/98)
Chloromethane	74-87-3	TBD	TBD	0.28	1.0	(6/98)
Vinyl Chloride	75-01-4	TBD	TBD	0.73	1.0	(6/98)
Bromomethane	74-83-9	TBD	TBD	0.10	1.0	(6/98)
Chloroethane	75-00-3	TBD	TBD	0.14	1.0	(6/98)
Trichlorofluoromethane	75-69-4	TBD	TBD	0.17	1.0	(6/98)
1,1,2-Trichloro-1,2,2-^trif	76-13-1	TBD	TBD	0.13	1.0	(6/98)
1,1-Dichloroethene	75-35-4	TBD	TBD	0.13	1.0	(6/98)
Methylene chloride	75-09-2	TBD	TBD	0.36	1.0	(6/98)
1,2-Dichloroethene (cis/trans)	540-59-0	TBD	TBD	0.25	1.0	(6/98)
1,1-Dichloroethane	75-34-3	TBD	TBD	0.12	1.0	(6/98)
Chloroform	67-66-3	TBD	TBD	0.11	1.0	(6/98)
1,1,1-Trichloroethane	71-55-6	TBD	TBD	0.10	1.0	(6/98)
Carbon Tetrachloride	56-23-5	TBD	TBD	0.10	1.0	(6/98)
1,2-Dichloroethane	107-06-2	TBD	TBD	0.10	1.0	(6/98)
Trichloroethene	79-01-6	TBD	TBD	0.10	1.0	(6/98)
1,2-Dichloropropane	78-87-5	TBD	TBD	0.13	1.0	(6/98)
Bromodichloromethane	75-27-4	TBD	TBD	0.07	1.0	(6/98)
cis-1,3-Dichloropropene	10061-01-5	TBD	TBD	0.10	1.0	(6/98)
trans-1,3-Dichloropropene	10061-02-6	TBD	TBD	0.13	1.0	(6/98)

TABLE 5-18
SACRAMENTO LABORATORY
8021 Volatile Aromatics and Halogens by GC
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
1,1,2-Trichloroethane	79-00-5	TBD	TBD	0.25	1.0	(6/98)
Tetrachloroethene	127-18-4	TBD	TBD	0.14	1.0	(6/98)
Dibromochloromethane	124-48-1	TBD	TBD	0.10	1.0	(6/98)
Bromoform	75-25-2	TBD	TBD	0.15	1.0	(6/98)
1,1,2,2-Tetrachloroethane	79-34-5	TBD	TBD	0.16	1.0	(6/98)

TABLE 5-19
SACRAMENTO LABORATORY
8270C Semivolatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Low Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Acenaphthene	83-32-9	41	330	513	5000	5.0	10	(2/98)/(2/98)/(5/98)
Acenaphthylene	208-96-8	30	330	545	5000	5.0	10	(2/98)/(2/98)/(5/98)
Anthracene	120-12-7	54	330	753	5000	1.2	10	(2/98)/(2/98)/(2/98)
Benzo(a)anthracene	56-55-3	26	330	767	5000	1.4	10	(2/98)/(2/98)/(2/98)
Benzo(a)pyrene	50-32-8	40	330	2500	5000	1.9	10	(2/98)/(2/98)/(2/98)
Benzo(b)fluoranthene	205-99-2	48	330	2500	5000	1.6	10	(2/98)/(2/98)/(2/98)
2,2'-Oxybis(1-chloropropane)	108-60-1	28	330	753	5000	1.9	10	(2/98)/(2/98)/(2/98)
Benzo(g,h,i)perylene	191-24-2	56	330	1070	5000	0.9	10	(2/98)/(2/98)/(2/98)
Benzo(k)fluoranthene	207-08-9	57	330	730	5000	1.4	10	(2/98)/(2/98)/(2/98)
Benzoic acid	65-85-0	250	1650	3750	25000	10	50	(2/98)/(2/98)/(5/98)
Benzyl alcohol	100-51-6	167	330	2500	5000	5.0	10	(2/98)/(2/98)/(5/98)
4-Bromophenyl phenyl ether	101-55-3	47	330	685	5000	5.0	10	(2/98)/(2/98)/(5/98)
Butyl benzyl phthalate	85-68-7	27	330	2500	5000	3.6	10	(2/98)/(2/98)/(2/98)
bis(2-chloroethoxy) methane	111-91-1	30	330	1062	5000	1.6	10	(2/98)/(2/98)/(2/98)
bis(2-chloroethyl)ether	111-44-4	33	330	971	5000	2.0	10	(2/98)/(2/98)/(2/98)
4-Chloro-3-methylphenol	59-50-7	85	330	1835	5000	3.7	10	(2/98)/(2/98)/(2/98)
2-Chloronaphthalene	91-58-7	20	330	881	5000	5.0	10	(2/98)/(2/98)/(5/98)
2-Chlorophenol	95-57-8	52	330	1296	5000	2.2	10	(2/98)/(2/98)/(2/98)
4-Chloroaniline	106-47-8	167	330	2500	5000	5.0	10	(2/98)/(2/98)/(5/98)
4-Chlorophenyl phenyl ether	7005-72-3	36	330	561	5000	5.0	10	(2/98)/(2/98)/(5/98)
Chrysene	218-01-9	67	330	828	5000	0.93	10	(2/98)/(2/98)/(2/98)
Di-n-butyl phthalate	84-74-2	62	330	2500	5000	2.9	10	(2/98)/(2/98)/(2/98)
Dibenz(a,h)anthracene	53-70-3	52	330	2500	5000	1.9	10	(2/98)/(2/98)/(2/98)
Dibenzofuran	132-64-9	56	330	762	5000	5.0	10	(2/98)/(2/98)/(5/98)
1,2-Dichlorobenzene	95-050-1	167	330	454	5000	5.0	10	(2/98)/(2/98)/(5/98)
1,3-Dichlorobenzene	541-73-1	167	330	543	5000	5.0	10	(2/98)/(2/98)/(5/98)
1,4-Dichlorobenzene	1206-46-7	167	330	574	5000	5.0	10	(2/98)/(2/98)/(5/98)
3,3-Dichlorobenzidine	91-94-1	167	1600	2500	25000	5.0	50	(2/98)/(2/98)/(5/98)

TABLE 5-19
SACRAMENTO LABORATORY
8270C Semivolatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Low Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
2,4-Dichlorophenol	120-83-2	157	330	2347	5000	3.9	10	(2/98)/(2/98)/(2/98)
Diethyl phthalate	84-66-2	41	330	426	5000	0.87	10	(2/98)/(2/98)/(2/98)
2,4-Dimethylphenol	105-67-9	86	330	1380	5000	10	50	(2/98)/(2/98)/(5/98)
Dimethyl phthalate	131-11-3	25	330	396	5000	5.0	10	(2/98)/(2/98)/(5/98)
4,6-Dinitro-2-methylphenol	534-52-1	35	1600	3750	25000	10	50	(2/98)/(2/98)/(5/98)
2,4-Dinitrophenol	51-28-5	250	1600	3750	25000	10	50	(2/98)/(2/98)/(5/98)
2,4-Dinitrotoluene	121-14-2	49	330	2500	5000	5.0	10	(2/98)/(2/98)/(5/98)
2,6-Dinitrotoluene	606-20-2	167	330	2500	5000	5.0	10	(2/98)/(2/98)/(5/98)
Di-n-octyl phthalate	117-84-6	41	330	2500	5000	3.2	10	(2/98)/(2/98)/(2/98)
bis(2-Ethylhexyl) phthalate	117-81-7	43	330	2500	5000	3.8	10	(2/98)/(2/98)/(2/98)
Fluoranthene	206-44-0	51	330	557	5000	2.2	10	(2/98)/(2/98)/(2/98)
Fluorene	86-73-7	57	330	669	5000	5.0	10	(2/98)/(2/98)/(5/98)
Hexachlorobenzene	118-074-1	43	330	500	5000	1.1	10	(2/98)/(2/98)/(2/98)
Hexachlorobutadiene	87-68-3	40	330	694	5000	5.0	10	(2/98)/(2/98)/(5/98)
Hexachlorocyclopentadiene	77-47-4	718	1600	7614	25000	5.0	50	(2/98)/(2/98)/(5/98)
Hexachloroethane	67-72-1	167	330	621	5000	5.0	10	(2/98)/(2/98)/(5/98)
Indeno(1,2,3-cd)pyrene	193-39-5	18	330	2500	5000	3.1	10	(2/98)/(2/98)/(2/98)
Isophorone	78-59-1	33	330	701	5000	0.88	10	(2/98)/(2/98)/(2/98)
2-Methylnaphthalene	91-57-6	30	330	605	5000	5.0	10	(2/98/(2/98)/(5/98)
2-Methylphenol	95-48-7	42	330	1957	5000	10	10	(2/98/(2/98)/(5/98)
4-Methylphenol	106-44-5	64	330	2441	5000	10	10	(2/98/(2/98)/(5/98)
Naphthalene	91-20-3	40	330	446	5000	5.0	10	(2/98/(2/98)/(5/98)
2-Nitroaniline	88-74-4	285	1600	7196	25000	18	50	(2/98)/(2/98)/(2/98)
3-Nitroaniline	99-09-2	197	1650	4498	25000	12	50	(2/98)/(2/98)/(5/98)
4-Nitroaniline	100-01-6	504	1600	3885	25000	13	50	(2/98/(2/98)/(2/98)
Nitrobenzene	98-95-3	35	330	2500	5000	2.7	10	(2/98/(2/98)/(2/98)
2-Nitrophenol	88-75-5	55	330	1173	5000	10	10	(2/98/(2/98)/(5/98)
4-Nitrophenol	100-02-7	720	1600	11543	25000	10	50	(2/98/(2/98)/(5/98)

TABLE 5-19
SACRAMENTO LABORATORY
8270C Semivolatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Low Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Mid Level Soil MDL (ug/kg)	Soil RL (ug/kg)	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
N-Nitrosodiphenylamine	86-30-6	34	330	2500	5000	0.66	10	(2/98)(2/98)/(2/98)
N-Nitroso-di-n-propylamine	621-64-7	24	330	2500	5000	0.91	10	(2/98)/(2/98)/(2/98)
Pentachlorophenol	87-86-5	250	1600	3750	25000	20	50	(2/98)/(2/98)/(5/98)
Phenanthrene	85-01-8	52	330	640	5000	1.2	10	(2/98)/(2/98)/(2/98)
Phenol	108-95-2	59	330	2353	5000	10	10	(2/98)/(2/98)/(5/98)
Pyrene	129-00-0	58	330	1137	5000	1.7	10	(2/98)/(2/98)/(2/98)
1,2,4-Trichlorobenzene	120-82-1	23	330	349	5000	5.0	10	(2/98)/(2/98)/(5/98)
2,4,5-Trichlorophenol	95-95-1	112	330	3750	5000	4.8	50	(2/98)/(2/98)/(2/97)
2,4,6-Trichlorophenol	88-06-2	85	330	1687	5000	10	10	(2/98)/(2/98)/(5/98)

TABLE 5-20
SACRAMENTO LABORATORY
8280A Dioxins and Furans
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (ng/g)	Soil RL (ng/g)	Water MDL (ηg/L)	Water RL (ηg/L)	Date of MDL
2,3,7,8-TCDF	51207-31-9	0.13	NA[1]	0.65	NA[1]	(5/98)/(7/98)
2,3,7,8-TCDD	1746-01-6	0.10	NA[1]	0.71	NA[1]	(5/98)/(7/98)
1,2,3,7,8-PnCDF	57117-41-6	0.32	NA[1]	2.29	NA[1]	(5/98)/(7/98)
2,3,4,7,8-PnCDF	57117-31-4	0.39	NA[1]	1.44	NA[1]	(5/98)/(7/98)
1,2,3,7,8-PnCDD	40321-76-4	0.29	NA[1]	2.64	NA[1]	(5/98)/(7/98)
1,2,3,4,7,8-HxCDF	70648-26-9	0.50	NA[1]	2.66	NA[1]	(5/98)/(5/98)
1,2,3,6,7,8-HxCDF	57117-44-9	0.63	NA[1]	3.73	NA[1]	(5/98)/(7/98)
1,2,3,7,8,9-HxCDF	72918-21-9	0.74	NA[1]	8.54	NA[1]	(5/98)/(7/98)
2,3,4,6,7,8-HxCDF	60851-34-5	0.28	NA[1]	3.62	NA[1]	(5/98)/(7/98)
1,2,3,4,7,8-HxCDD	39227-28-6	0.61	NA[1]	4.03	NA[1]	(5/98)/(5/98)
1,2,3,6,7,8-HxCDD	57653-85-7	0.83	NA[1]	3.53	NA[1]	(5/98)/(7/98)
1,2,3,7,8,9-HxCDD	19408-74-3	0.48	NA[1]	5.20	NA[1]	(5/98)/(7/98)
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.16	NA[1]	1.25	NA[1]	(7/98)/(7/98)
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.35	NA[1]	5.51	NA[1]	(5/98)/(7/98)
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.25	NA[1]	3.07	NA[1]	(7/98)/(7/98)
OCDF	39001-02-0	0.50	NA[1]	2.78	NA[1]	(5/98)/(7/98)
OCDD	3268-87-9	0.50	NA[1]	3.37	NA[1]	(5/98)/(7/98)

Footnotes

[1] Estimated detection limits are determined for each environmental sample.

TABLE 5-21
SACRAMENTO LABORATORY
8290 Dioxins and Furans
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (pg/g)	Soil RL (pg/g)	Water MDL (pg/L)	Water RL (pg/L)	Date of MDL
2,3,7,8-TCDF	51207-31-9	0.067	NA[1]	1.58	NA[1]	(9/97)/(2/96)
2,3,7,8-TCDD	1746-01-6	0.123	NA[1]	3.10	NA[1]	(9/97)/(2/96)
1,2,3,7,8-PnCDF	57117-41-6	0.250	NA[1]	11.7	NA[1]	(9/97)/(2/96)
2,3,4,7,8-PnCDF	57117-31-4	0.305	NA[1]	17.3	NA[1]	(9/97)/(2/96)
1,2,3,7,8-PnCDD	40321-76-4	0.250	NA[1]	12.5	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8-HxCDF	70648-26-9	0.290	NA[1]	22.2	NA[1]	(9/97)/(2/96)
1,2,3,6,7,8-HxCDF	57117-44-9	0.250	NA[1]	15.1	NA[1]	(9/97)/(2/96)
1,2,3,7,8,9-HxCDF	72918-21-9	0.338	NA[1]	25.4	NA[1]	(9/97)/(2/96)
2,3,4,6,7,8-HxCDF	60851-34-5	0.347	NA[1]	23.6	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8-HxCDD	39227-28-6	0.506	NA[1]	23.8	NA[1]	(9/97)/(2/96)
1,2,3,6,7,8-HxCDD	57653-85-7	0.348	NA[1]	17.0	NA[1]	(9/97)/(2/96)
1,2,3,7,8,9-HxCDD	19408-74-3	0.337	NA[1]	15.9	NA[1]	(9/97)/(2/96)
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.250	NA[1]	18.9	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.259	NA[1]	22.7	NA[1]	(9/97)/(2/96)
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.250	NA[1]	10.9	NA[1]	(9/97)/(2/96)
OCDF	39001-02-0	0.500	NA[1]	60.6	NA[1]	(9/97)/(2/96)
OCDD	3268-87-9	0.991	NA[1]	36.2	NA[1]	(9/97)/(2/96)

Footnotes

[1] Estimated detection limits are determined for each environmental sample.

TABLE 5-22
SACRAMENTO LABORATORY
1613A Dioxins and Furans
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (pg/g)	Soil RL (pg/g)	Water MDL (pg/L)	Water RL (pg/L)	Date of MDL
2,3,7,8-TCDF	51207-31-9	0.067	NA[1]	1.23	NA[1]	(9/97)/(2/96)
2,3,7,8-TCDD	1746-01-6	0.123	NA[1]	3.11	NA[1]	(9/97)/(2/96)
1,2,3,7,8-PnCDF	57117-41-6	0.250	NA[1]	11.8	NA[1]	(9/97)/(2/96)
2,3,4,7,8-PnCDF	57117-31-4	0.250	NA[1]	13.8	NA[1]	(9/97)/(2/96)
1,2,3,7,8-PnCDD	40321-76-4	0.250	NA[1]	12.5	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8-HxCDF	70648-26-9	0.290	NA[1]	22.2	NA[1]	(9/97)/(2/96)
1,2,3,6,7,8-HxCDF	57117-44-9	2.50	NA[1]	12.0	NA[1]	(9/97)/(2/96)
1,2,3,7,8,9-HxCDF	72918-21-9	2.50	NA[1]	14.0	NA[1]	(9/97)/(2/96)
2,3,4,6,7,8-HxCDF	60851-34-5	2.50	NA[1]	15.8	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8-HxCDD	39227-28-6	0.510	NA[1]	12.9	NA[1]	(9/97)/(2/96)
1,2,3,6,7,8-HxCDD	57653-85-7	0.348	NA[1]	17.0	NA[1]	(9/97)/(2/96)
1,2,3,7,8,9-HxCDD	19408-74-3	0.338	NA[1]	15.9	NA[1]	(9/97)/(2/96)
1,2,3,4,6,7,8-HpCDF	67562-39-4	0.250	NA[1]	18.9	NA[1]	(9/97)/(2/96)
1,2,3,4,7,8,9-HpCDF	55673-89-7	0.250	NA[1]	16.3	NA[1]	(9/97)/(2/96)
1,2,3,4,6,7,8-HpCDD	35822-46-9	0.250	NA[1]	10.9	NA[1]	(9/97)/(2/96)
OCDF	39001-02-0	0.500	NA[1]	60.6	NA[1]	(9/97)/(2/96)
OCDD	3268-87-9	0.991	NA[1]	36.2	NA[1]	(9/97)/(2/96)

Footnotes

[1] Estimated detection limits are determined for each environmental sample.

TABLE 5-23
SACRAMENTO LABORATORY
524.2 Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Benzene	71-43-2	0.25	0.5	5/98
Bromobenzene	108-86-1	0.21	0.5	5/98
Bromochloromethane	74-97-5	0.17	0.5	5/98
Bromodichloromethane	75-27-4	0.24	0.5	5/98
Bromoform	75-25-2	0.21	0.5	5/98
Bromomethane	74-83-9	0.25	0.5	5/98
n-Butylbenzene	104-51-8	0.25	0.5	5/98
sec-Butylbenzene	135-98-8	0.25	0.5	5/98
t-Butylbenzene	98-06-6	0.24	0.5	5/98
Carbon Tetrachloride	56-23-5	0.21	0.5	5/98
Chlorobenzene	108-90-7	0.23	0.5	5/98
Chloroethane	75-00-3	0.28	0.5	5/98
Chloroform	67-66-3	0.20	0.5	5/98
Chloromethane	74-87-3	0.28	0.5	5/98
2-Chlorotoluene	95-49-8	0.27	0.5	5/98
4-Chlorotoluene	106-43-4	0.26	0.5	5/98
Dibromochloromethane	124-48-1	0.17	0.5	5/98
1,2-Dibromo-3-chloropropane (DBCP)	96-12-8	0.35	0.5	5/98
1,2-Dibromoethane (EDB)	106-93-4	0.18	0.5	5/98
Dibromomethane	74-95-3	0.19	0.5	5/98
1,2-Dichlorobenzene	95-50-1	0.25	0.5	5/98
1,3-Dichlorobenzene	541-73-1	0.24	0.5	5/98
1,4-Dichlorobenzene	106-46-7	0.23	0.5	5/98
Dichlorodifluoromethane	75-71-8	0.26	0.5	5/98
1,1-Dichloroethane	75-34-3	0.25	0.5	5/98
1,2-Dichloroethane	107-06-2	0.18	0.5	5/98
1,1-Dichloroethene	75-35-4	0.25	0.5	5/98

TABLE 5-23
SACRAMENTO LABORATORY
524.2 Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
cis-1,2-Dichloroethene	156-59-2	0.23	0.5	5/98
trans-1,2-Dichloroethene	156-60-5	0.26	0.5	5/98
1,2-Dichloropropane	78-87-5	0.19	0.5	5/98
1,3-Dichloropropane	142-28-9	0.23	0.5	5/98
2,2-Dichloropropane	590-20-7	0.23	0.5	5/98
1,1-Dichloropropene	563-58-6	0.26	0.5	5/98
cis-1,3-Dichloropropene	10061-01-5	0.17	0.5	5/98
trans-1,3-Dichloropropene	10061-02-6	0.13	0.5	5/98
Ethylbenzene	100-41-4	0.26	0.5	5/98
Hexachlorobutadiene	87-68-3	0.25	0.5	5/98
Isopropylbenzene	98-82-8	0.24	0.5	5/98
Styrene	100-42-5	0.23	0.5	5/98
p-Isopropyltoluene	99-87-6	0.24	0.5	5/98
Methylene Chloride	75-09-2	0.19	0.5	5/98
Naphthalene	91-20-3	0.27	0.5	5/98
n-Propylbenzene	103-65-1	0.27	0.5	5/98
Tetrachloroethene	127-18-4	0.26	0.5	5/98
1,1,1,2-Tetrachloroethane	630-20-6	0.25	0.5	5/98
1,1,2,2-Tetrachloroethane	79-34-5	0.21	0.5	5/98
1,2,3-Trichlorobenzene	87-61-6	0.33	0.5	5/98
1,2,4-Trichlorobenzene	120-82-1	0.26	0.5	5/98
1,1,1-Trichloroethane	71-55-6	0.24	0.5	5/98
1,1,2-Trichloroethane	79-00-5	0.21	0.5	5/98
Trichloroethene	79-01-6	0.27	0.5	5/98
Trichlorofluoromethane	75-69-4	0.25	0.5	5/98
1,2,3-Trichloropropane	96-18-4	0.26	0.5	5/98
1,2,4-Trimethylbenzene	95-633-6	0.26	0.5	5/98
1,3,5-Trimethylbenzene	108-67-8	0.23	0.5	5/98

TABLE 5-23
SACRAMENTO LABORATORY
524.2 Volatile Organics by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)
(Continued)

Analyte	CAS Number	Water MDL (µg/L)	Water RL (µg/L)	Date of MDL
Toluene	108-88-3	0.24	0.5	5/98
Vinyl Chloride	75-01-4	0.23	0.5	5/98
m&p-Xylene	7816-60-0	0.50	1.0	5/98
o-Xylene	95-47-6	0.24	0.5	5/98

TABLE 5-24
SACRAMENTO LABORATORY
1664 Oil and Grease
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	Water MDL (mg/L)	Water RL (mg/L)	Date of MDL
Oil & Grease	2.6941	5.0	5/96

Table 5-25
SACRAMENTO LABORATORY
Method 8321 EXP- Low Level Explosives by LCMS
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (ug/l)	Water RL (ug/L)	Date of MDL
HMX	2691-41-0	0.011	0.05	0.037	0.18	(10/97)/(10/97)
1,3,5-Trinitrobenzene (TNB)	99-35-4	0.010	0.05	0.020	0.10	(10/97)/(10/97)
Cyclotrimethylenetrinitramine(RDX)	121-82-4	0.025	0.12	0.015	0.08	(10/97)/(10/97)
1,3-Dinitrobenzene (DN)	99-65-0	0.015	0.08	0.012	0.06	(10/97)/(10/97)
2,4,6-Trinitrotoluene (TNT)	118-96-7	0.005	0.03	0.059	0.27	(10/97)/(10/97)
Tetryl	479-45-8	0.009	0.04	0.043	0.21	(10/97)/(10/97)
Nitrobenzene (NB)	98-95-3	0.100	0.50	0.151	0.76	(10/97)/(10/97)
Nitroglycerin (NG)	55-63-0	0.092	0.46	0.088	0.44	(10/97)/(10/97)
2,4-Dinitrotoluene (2,4-DNT)	121-14-2	0.018	0.09	0.017	0.08	(10/97)/(10/97)
2-Amino-4,6-Dinitrotoluene (2-Am-4,6-DNT)	35572-78-2	0.013	0.07	0.034	0.17	(10/97)/(10/97)
2,6-Dinitrotoluene (2,6-DNT)	606-20-2	0.012	0.06	0.010	0.05	(10/97)/(10/97)
4-Amino-2,6-Dinitrotoluene (4-Am-2,6-DNT)	19406-51-0	0.015	0.07	0.011	0.06	(10/97)/(10/97)
2-Nitrotoluene & 4-Nitrotoluene (2- & 4-NT)	88-72-2 99-99-0	0.035	0.17	0.164	0.82	(10/97)/(10/97)
Pentaerythritol tetranitrate (PETN)	78-11-5	0.115	0.57	0.069	0.34	(10/97)/(10/97)
3-Nitrotoluene (3-NT)	99-08-1	0.136	0.68	0.183	0.91	(10/97)/(10/97)

TABLE 5-26
SACRAMENTO LABORATORY
CWM Degradates
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (ug/L)	Water RL (ug/L)	Date of MDL
2,2'-Thiodiethanol (Thiodiglycol)	11-48-8	4.2	21	1.7	8.4	(12/96)/(12/96)
Dimethylmethylphosphonate (DMMP)	756-79-6	4.4	22	1.7	8.7	(12/96)/(12/96)
Methylphosphonic acid (MPA)	993-13-5	44	222	12	58	(12/96)/(12/96)
Ethyl methylphosphonic acid (EMPA)	1832-53-7	4.9	24	2.9	15	(12/96)/(12/96)
Diisoporopylmethylphosphonate (DIMP)	1445-75-6	4.0	20	3.5	17	(12/96)/(12/96)
Isopropyl methylphosphonic acid (IMPA)	1832-54-8	15	74	8.1	40	(1/97)/(1/97)

TABLE 5-27
SACRAMENTO LABORATORY
8270 Modified: Organosulfurs by GC/MS
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Soil MDL (mg/kg)	Soil RL (mg/kg)	Water MDL (mg/L)	Water RL (mg/L)	Date of MDL
Dimethyl Disulfide	624-92-0	0.23	0.5	1.33	1.33	(12/96)/(12/96)
1,4-Oxathiane	15980-15-1	0.37	0.5	2.86	2.86	(12/96)/(12/96)
1,4-Dithiane	505-29-3	0.46	1.0	2.16	2.16	(12/96)/(12/96)
Benzothiazole	95-16-9	0.48	1.0	2.38	2.38	(12/96)/(12/96)
p-Chlorophenylmethyl sulfide	123-09-1	0.47	1.0	2.76	2.76	(12/96)/(12/96)
p-Chlorophenylmethyl sulfoxide	924-73-6	2.24	5.0	4.51	4.51	(12/96)/(12/96)
p-Chlorophenylmethyl sulfone	98-57-7	1.23	5.0	4.34	4.34	(12/96)/(12/96)

TABLE 5-28
SACRAMENTO LABORATORY
Lead by GFAA-Air Filters
Method Detection Limits (MDL) and
Reporting Limits (RL)

Analyte	CAS Number	Quartz MDL (ug/L)	Quartz RL (ug/L)	Glass Filter MDL (ug/L)	Glass Filter RL (ug/L)	Date of MDL
Lead	7439-92-1	0.82	10	0.51	10	(5/98)/(5/98)

Facility Appendix
Sacramento Laboratory

Section Sacramento-6

Performance
Evaluation
Studies

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TABLE 6-1
SACRAMENTO LABORATORY
Performance Evaluation Sample Programs

Performance Evaluation Sample Program Description	Analysis Performed	Frequency of Participation
U.S. Environmental Protection Agency Water Pollution Laboratory PE Study	Trace Metals, Minerals, Nutrients, Demand, PCBs in Water, PCBs in Transformer Oil, Pesticides (Insecticides), Volatile Halocarbons, Volatile Aromatics, and Miscellaneous (TSS, Cyanide, Oil & Grease, Total Phenolics)	Semi-annually
U.S. Environmental Protection Agency Water Supply Laboratory PE Study	Trace Metals, Nitrate/Nitrite/Fluoride, Pesticides, Herbicides, PAHs, Adipates/Phthalates, Trihalomethanes, Regulated VOCs, Unregulated VOCs, and Miscellaneous (TDS, Hardness, pH, Alkalinity, Sodium, Sulfate, Cyanide)	Semi-annually
USACE-MRD	Metals, Anions, Phenolics, Cyanide, Volatiles by GC and GCMS, Organochlorine, Pesticides, PCBs, Herbicides, PAH, TOC, TPH Gas and Diesel, Explosives, Dioxins, Semivoltiles by GCMS	18 Months
HAZWRAP- Lockheed Martin	Volatiles, Semivolatiles, Pesticides, Explosives, Metals, Cyanide	18 Months
Calif. Dept. of Health Services	Organics, Inorganics	Biannually
USGS	Metals, General Chemistry	Annually
Environmental Resource Associates (ERA)	Priority Pollutant Organics, Priority Pollutant Inorganics, Nutrients, Hydrocarbon Fuels, Grease and Oil, Minerals, Trace Metals, Demand, Cyanide, Phenol	As per client issue.
Quanterra Inc. Double-Blind	Volatile Organics, Metals, General Chemistry, Base/Neutral Extractables, Acid Extractables, Project Managemet	Annually
Analytical Products Group, Inc. (APG) Real World Matrix PE Program	Demand, Nutrients, Solids, Oil and Grease, Minerals, pH, Trace Metals, Phenol, Cyanide, Fluoride, Total Organic Halide, Hexavalent Chromium, Volatile Organics, Acid Extractables, Base/Neutral Extractables, Pesticides, Polynuclear Aromatic Hydrocarbons, Purgeable Aromatics (BTEX)	Semi-annually

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Facility Appendix
Sacramento Laboratory

Section Sacramento-7

Additional
Operation-Specific
Information

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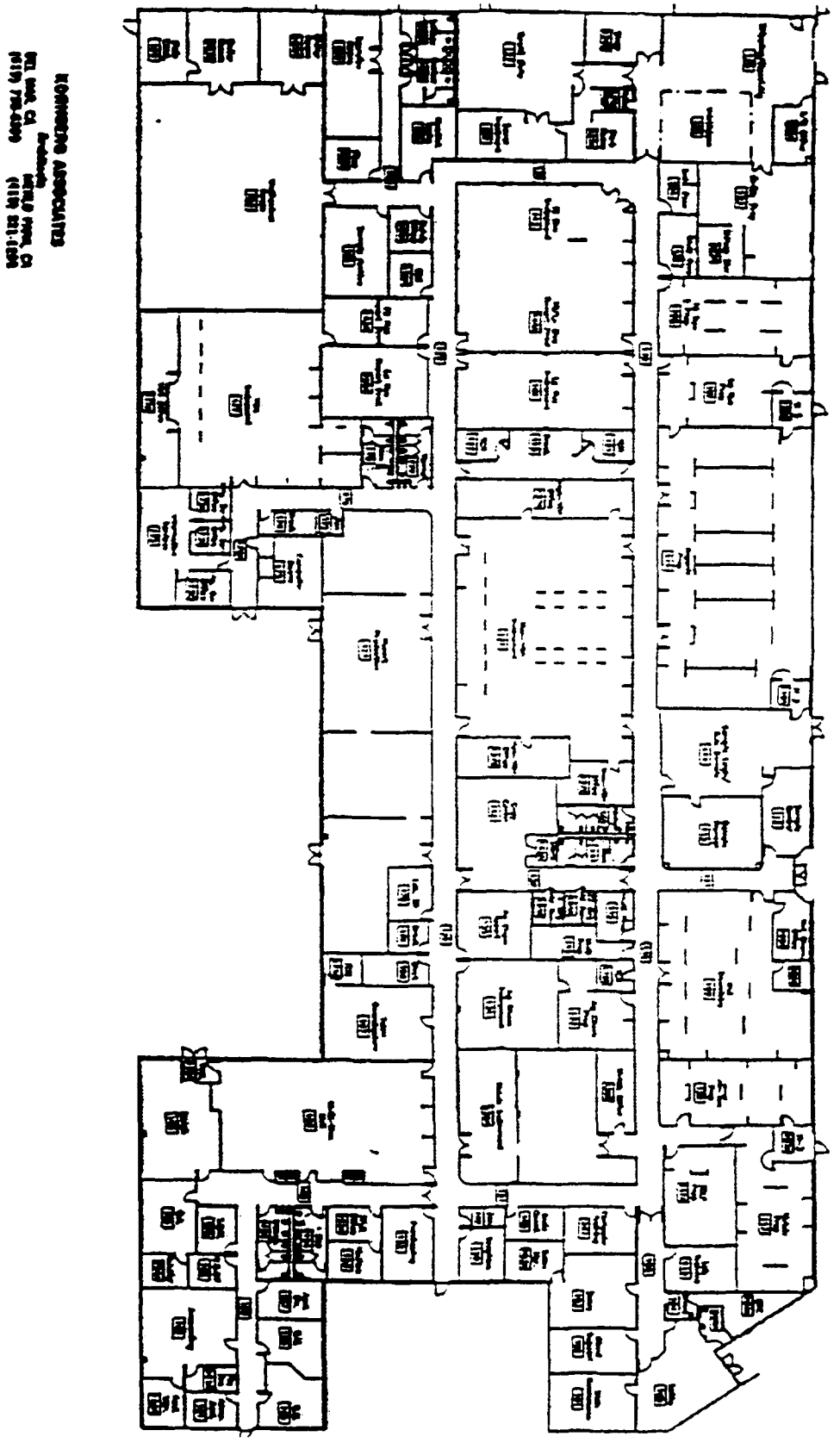
FIGURE 7-1


KOMMEDIER ARCHITECTS
ARCHITECTS
DALE PARK, CA
(510) 831-1848
EL DORADO HILLS, CA
(916) 742-0000

Facility Description

The West Sacramento facility covers 66,000 square feet, 43,000 of which is devoted to laboratory areas where routine sample analyses for organic and inorganic constituents are performed. Work hours are 8:00 AM to 5:00 PM Monday through Friday. Samples may be received until 6:00 PM Monday through Friday, and 8:00 AM to 2:00 PM Saturdays. The laboratory supports all major Department of Defense programs, and posesses laboratory accreditations in fourteen states.

As innovators in research and technology, the West Sacramento laboratory leads in the application of state-of-the-art instrumentation to environmental problems. The laboratory performs analyses by Liquid Chromatography/Mass Spectrometry (LC/MS) for explosives residues, pesticides and specialty chemicals; Inductively Coupled Plasma/Mass Spectrometry (ICP/MS) for low-level metals analyses; and High Resolution Gas Chromatography/High Resolution Mass Spectrometry for trace level detections of dioxins/furans, co-planar polychlorinated biphenyls, and polynuclear aromatic hydrocarbons in a variety of matrices. The facility also provides testing for nonvolatile components in support of air monitoring programs, including dioxins, metals, anions, and base/neutral organic compounds.

APPENDIX D
ADDITIONAL DIOXIN METHOD INFORMATION

D1 - Method 8280A
D2 - Method 8290

APPENDIX D1
Method 8280A

SW8280 - Polychlorinated Dibenzo Dioxins and Polychlorinated Dibenzofurans by GC/MS

This method is appropriate for the determination of tetra-, penta-, hexa-, hepta-, and octa-, chlorinated dibenzo-p-dioxins (PCDDs) and dibenzo-furans (PCDFs). This procedure uses a matrix-specific extraction, analyte specific cleanup, and high resolution capillary column gas chromatography/low resolution mass spectrometry (HRGC/LRMS) techniques. The sensitivity of this method is dependent upon the level of interferents within a given matrix. Proposed quantification levels for target analytes are 0.5 ppb in solid samples and 5 ppt in water for TCDD, TCDF. (1.25 ppb and 12.5 ppt for PeCDD, PeCDF, HxCDD, HxCDF, HpCDD, and HpCDF; 2.5 ppb and 25 ppt for OCDD and OCDF, respectively) Actual values have been shown to vary by homologous series and, to a lesser degree, by individual isomer. All PCDD and PCDF analyses performed (for EPA since 1982) have used a technique for calculating the detection limit for each of the chlorination levels and each congener by using the noise level present in the elution window and the height of the chromatographic peak of the internal standard. Both the signal to noise and peak height are determined by the GC/MS data system and the result of the calculation is a detection limit that is specific to the homologous series and sample.

Dioxins and Furans by GC/MS

Methods SW8280 is used to detect dioxins and furans in a variety of matrices and use additional quality control to allow more sophisticated determinations of detection limits and matrix spike recoveries than other routine GC and GC/MS methods.

SW8280 requires isotopically labeled analogs of target analytes to be spiked into each sample before extraction. SW8280 uses five C13 analogs. These isotopically labeled analogs elute and behave as target analytes do, without interfering with the analysis. Target analytes are quantitated relative to the isotope analog and therefore their calculated concentration is compensated for extraction efficiency.

There is a three tiered approach to reporting and detection limits. In the absence of target analytes, a sample specific estimated detection limit (EDL) is calculated based on method signal to noise ratios. The target

analyte is then reported as "not detected" at the EDL. When target analytes are found, they are reported down to the lower calibration limits without conditional modifiers such as a J flag. If below the lower calibration limit, the target analyte will be qualified as such.

If there is a peak which meets the signal-to-noise criteria, but not all of the other identification criteria (i.e. retention time, ion ratio, absence of diphenyl ethers, and analyst judgement), an EMPC (estimated maximum possible concentration) based on the ion peak is calculated. The target analyte is reported as "not detected" at that calculated detection limit and is qualified as an EMPC.

The assessment of matrix effects on method performance, assessed by matrix spikes and matrix spike duplicates in other GC and GC/MS methods, can be met in SW8280 with the isotopically labeled analogs. These isotopes are spiked into each sample and therefore matrix effects on method performance can be judged by the recovery of these isotopes, for each sample. Sample analysis acceptance is controlled by the performance of these isotopes in the sample. The batch LCS will use isotopically labeled analogs of the target analytes and unlabelled natives to control the batch. The target analyte amount for LCS is given in Table 3. These amounts are nominal values based on a full volume sample preparation (1000 mLs for liquids and 10 grams for soils for SW8280). If less than a full volume of sample is prepared due to matrix interferences, sample availability, or method requirements (see Table 3), the spiked amount will remain constant and therefore the spike concentration will change.

In summary, no MS/MSD will be performed for SW8280 sample analyses and batch control will be done by the recovery of the spiked, isotopically labeled, analogs and unlabelled natives. See tables for specific QC control limits.

TABLE 1 TARGET DETECTION LIMITS FOR QUANTERRA WEST SACRAMENTO

Parameter	Method W=Water S=Soil	Analyte	Water (ng/L)	Soil (ng/g)
Dioxins/Furans	SW8280(e)	Dioxins		
		2,3,7,8-TCDD	1.0-10	0.1-0.5
		1,2,3,7,8-PeCDD	5.0-50	0.5-5.0
		1,2,3,4,7,8-HxCDD	5.0-50	0.5-5.0
		1,2,3,6,7,8-HxCDD	5.0-50	0.5-5.0
		1,2,3,7,8,9-HxCDD	5.0-50	0.5-5.0
		1,2,3,4,6,7,8-HpCDD	5.0-50	0.5-5.0
		OCDD	10-100	1.0-10
		Furans		
		2,3,7,8-TCDF	1.0-10	0.1-1.0
		1,2,3,7,8-PeCDF	5.0-50	0.5-5.0
		2,3,4,7,8-PeCDF	5.0-50	0.5-5.0
		1,2,3,4,7,8-HxCDF	5.0-50	0.5-5.0
		1,2,3,6,7,8-HxCDF	5.0-50	0.5-5.0
		2,3,4,6,7,8-HxCDF	5.0-50	0.5-5.0
		1,2,3,7,8,9-HxCDF	5.0-50	0.5-5.0
		1,2,3,4,6,7,8-HpCDF	5.0-50	0.5-5.0
		1,2,3,4,7,8,9-HpCDF	5.0-50	0.5-5.0
		OCDF	10-100	1.0-10

(e) = SW8280 specifies that sample specific detection limits (EDLs) be calculated and reported.

Test Code = ISODXNFUR-A
ISODXNFUR-S

TABLE 2 QUANTERRA WEST SACRAMENTO LABORATORY CONTROL LIMITS FOR INTERNAL STANDARDS

Analytical Method	Spiking Compounds	Spike Concentration Water (ng/L)	Spike Concentration Soil/Sediments (ng/g)	Laboratory-Established Control Limits Percent Recovery (%) Water	Percent Recovery (%) Soil/Sediments	Relative Percent Difference (%) Water	Relative Percent Difference (%) Soil/Sediments
SW8280(d)(f)	^{13}C-2,3,7,8-TCDF	25	2.5	40-120	40-120	N/A	N/A
	^{13}C-2,3,7,8-TCDD	25	2.5	40-120	40-120	N/A	N/A
	^{13}C-HxCDD	25	2.5	40-120	40-120	N/A	N/A
	^{13}C-HpCDF	50	5.0	40-120	40-120	N/A	N/A
	^{13}C-OCDD	50	5.0	40-120	40-120	N/A	N/A

(d) = Method default limits. Signal-to-noise is also evaluated for data acceptability.
(f) = These labeled analytes are spiked into all samples.

TABLE 3 QUANTERRA WEST SACRAMENTO CONTROL LIMITS FOR LABORATORY CONTROL SAMPLES

Updated 6/26/97

Analytical Method	Spiking Compounds	Spike Concentration Water (ng/L)	Spike Concentration Soil/Sediments (ng/g)	Laboratory-Established Control Limits Percent Recovery (%) Water	Percent Recovery (%) Soil/Sediments	Relative Percent Difference (%) Water	Relative Percent Difference (%) Soil/Sediments
8280	2,3,7,8-TCDF	25	2.5	83-142	88-132	20	35
	1,2,3,7,8-PeCDF	62.5	6.25	61-191	83-169	20	35
	1,2,3,6,7,8-HxCDF	62.5	6.25	76-140	83-134	20	35
	1,2,3,4,6,7,8-HpCDF	62.5	6.25	83-140	89-128	20	35
	OCDF	125	12.5	77-168	92-150	20	35
	2,3,7,8-TCDD	25	2.5	80-143	88-134	20	35
	1,2,3,7,8-PeCDD	62.5	6.25	74-170	83-156	20	35
	1,2,3,6,7,8-HxCDD	62.5	6.25	73-157	74-153	20	35
	1,2,3,4,6,7,8-HpCDD	62.5	6.25	67-177	66-169	20	35
	OCDD	125	12.5	79-137	88-125	20	35
(d)	^{13}C-2,3,7,8-TCDF	25	2.5	40-120	40-120	N/A	N/A
(d)	^{13}C-2,3,7,8-TCDD	25	2.5	40-120	40-120	N/A	N/A
(d)	^{13}C-HxCDD	25	2.5	40-120	40-120	N/A	N/A
(d)	^{13}C-HpCDF	50	5.0	40-120	40-120	N/A	N/A
(d)	^{13}C-OCDD	50	5.0	40-120	40-120	N/A	N/A

(d) = Method default limits. Signal-to-noise is also evaluated for data acceptability.

TABLE 4 QUANTERRA WEST SACRAMENTO SUMMARY OF CALIBRATION PROCEDURES

Method	Parameter	Calibration	Frequency	Acceptance Criteria	Corrective Action
SW8280 (GC/MS)	Dioxins/Furans	Check of instrument tuning using FC43 in high mass range.	As needed.	Tune for maximum sensitivity of m/z 414 & m/z 502 $\pm$ 4-10% of m/z 219	1) Retune instrument 2) Repeat FC43 analysis
		Window Defining Mix (WDM). Can be combined with CPSM.	Prior to ICAL, initial CCAL and each time adjustments or maintenance activities are performed that may affect retention times.	None. Used to set retention time windows (RT).	1) Readjust windows. 2) Reinject WDM/CPSM.
		Column performance solution mixture (CPSM).	Prior to ICAL and CCAL and at the end of 12 hr sequence on the SP-2331 column only.	Resolution of TCDDs must be $\leq$ 25%.	1) Evaluate system. 2) Perform maintenance. 3) Reanalyze CPSM.
		Multipoint Calibration (5 point - CC1-CC5) (ICAL).	Initially and as required.	Refer to Table A for ion abundance ratios. Internal std S/N > 10:1. Unlabelled PCDDs/PCDFs S/N > 2.5:1. 15% RSD. RTs consistent with WDM.	1) Evaluate system. 2) Recalibrate.
		Continuing calibration check standard (CCAL).	Every 12 hours.	%D $\leq$ 30% from the average RRF (ICAL).	1) Evaluate system. 2) Reinject CCAL. 3) Recalibrate as needed.

TABLE 5 QUANTERRA WEST SACRAMENTO SUMMARY OF INTERNAL QUALITY CONTROL PROCEDURES

Method	Parameter	QC Element	Frequency	Acceptance Criteria	Corrective Action
SW8280 (HRGC/LRMS)	Dioxins/Furans	Method blank	1/batch, not to exceed 20 samples.	≤ TDL, Internal standard criteria met.	1) Run system blank. 2) Assess impact on data. 3) Reanalyze. 4) Reprep batch as necessary.
		System blank	As required.	≤ TDL	Run until system is clean
		Internal standards	Every sample, method blank and LCS.	1) Internal standard recovery > 40% or Signal to noise ratio > 10:1.	1) Recalculate signal to noise ratio 2) Reanalyze extract. 3) Reextract using a smaller sample aliquot.
		Duplicate	Per client request.	%RPD ≤ 50%	1) Recalculate. 2) Assess impact on data. 3) Reanalyze once. 4) Reextract if necessary. 5) Narrate any outliers.
		MS/MSD	Per client request.	Refer to Table 3	1) Recalculate. 2) Assess impact on data. 3) Reanalyze once. 4) Reextract if necessary. 5) Narrate any outliers.
		LCS (include natives) (MBNS)	1/batch, not to exceed 20 samples.	Refer to Table 3	1) Check calculations. 2) Assess impact on data. 3) Reanalyze once. 4) Reextract batch as necessary. 5) Narrate any outliers.
		Recovery standard	Every sample, method blank and LCS prior to instrument analysis.	Refer to Table A	1) Check calculations. 2) Reanalyze.

TABLE A CRITERIA FOR ISOTOPIC RATIO MEASUREMENTS FOR PCDDS AND PCDFS BY 8280

Analyte	Selected Ions	Relative Intensity
PCDFs		
Tetra	304/306	0.65-0.89
Penta	340/342	1.24-1.86
Hexa	374/376	1.05-1.43
Hepta	408/410	0.88-1.20
Octa	442/444	0.76-1.02
PCDDs		
Tetra	320/322	0.65-0.89
Penta	356/358	1.24-1.86
Hexa	390/392	1.05-1.43
Hepta	424/426	0.88-1.20
Octa	458/460	0.76-1.02
Internal Standards		
^{13}C-TCDF	316/318	0.65-0.89
^{13}C-2,3,7,8-TCDD	332/334	0.65-0.89
^{13}C-HxCDD	402/404	1.05-1.43
^{13}C-HpCDF	420/422	0.88-1.20
^{13}C-OCDD	470/472	0.76-1.02
Recovery Standards		
^{13}C-1,2,3,4-TCDD	332/334	0.65-0.89
^{13}C-1,2,3,7,8,9-HxCDD	402/404	1.05-1.43

TABLE 6 QUANTERRA WEST SACRAMENTO METHOD DETECTION LIMITS

Parameter	Method W=Water S=Soil	Analyte	MDL ng/L	MDL ng/g
Dioxins/Furans	SW8280	Dioxins		
		2,3,7,8-TCDD	0.30	0.03
		1,2,3,7,8-PeCDD	0.86	0.08
		1,2,3,4,7,8-HxCDD	1.40	0.19
		1,2,3,6,7,8-HxCDD	1.44	0.29
		1,2,3,7,8,9-HxCDD	0.59	0.04
		1,2,3,4,6,7,8-HpCDD	1.18	0.08
		OCDD	2.18	0.12
		Furans		
		2,3,7,8-TCDF	0.16	0.03
		1,2,3,7,8-PeCDF	1.17	0.12
		2,3,4,7,8-PeCDF	0.87	0.08
		1,2,3,4,7,8-HxCDF	1.23	0.09
		1,2,3,6,7,8-HxCDF	1.18	0.14
		2,3,4,6,7,8-HxCDF	0.59	0.10
		1,2,3,7,8,9-HxCDF	0.58	0.11
		1,2,3,4,6,7,8-HpCDF	0.96	0.05
		1,2,3,4,7,8,9-HpCDF	0.83	0.09
		OCDF	1.10	0.12

APPENDIX D2
Method 8290

SW8290 Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by High Resolution Gas Chromatography/High Resolution Mass Spectrometry (HRGC/HRMS)

This method provides instrument and extraction procedures for the detection and quantitation of PCDDs (tetra through octa-chlorinated homologues) and PCDFs (tetra through octa-chlorinated homologues) in a variety of sample matrices and part-per-trillion (ppt) to part-per-quadrillion (ppq) concentrations.

Dioxins and Furans by GC/MS

Method SW8290 is used to detect dioxins and furans in a variety of matrices and uses additional quality controls to allow more sophisticated determinations of detection limits and matrix spike recoveries than other routine GC and GC/MS methods.

SW8290 requires isotopically labeled analogs of target analytes to be spiked into each sample before extraction, and uses nine C13 analogs. These isotopically labeled analogs elute and behave as target analytes do, without interfering with the analysis. Target analytes are quantitated relative to the isotope analog and therefore their calculated concentration is compensated for extraction efficiency.

There is a three tiered approach to reporting and detection limits. In the absence of target analytes, a sample specific estimated detection limit (EDL) is calculated based on signal-to-noise (S/N) ratios at the retention time of the analyte. The

target analyte is then reported as "not detected" at the EDL. When target analytes are found, they are reported down to the lowest calibration standard concentration without conditional modifiers such as a J flag. Below the SW846 specified reporting limits, qualitatively confirmed analytes are reported as "estimated" down to the target detection limit (TDL) to denote the less certain quantitation. The TDL is a value set by the lab at which there is no significant chance of false positives. If there is a peak below the TDL, and all qualitative criteria such as retention time, ion ratios, signal to noise ratio, the absence of diphenyl ether, and analyst judgement, are not met, a detection limit based on the ion peaks is calculated and the target analyte is reported as "not detected" at that calculated detection limit.

The assessment of matrix effects on method performance can be met in SW8290 with the isotopically labeled analogs. These isotopes are spiked into each sample and therefore matrix effects on method performance can be judged by the recovery of these isotopes, for each sample. Sample analysis acceptance is controlled by the performance of these isotopes in the sample. The batch specific LCS will use isotopically labelled analogs of the target analytes and unlabelled natives to control the batch. The target analyte concentration for LCS is given in Table 2. These concentrations are nominal values based on a full volume sample preparation (1000 mls for liquids and 10 grams for soils). If less than a full volume of sample is prepared due to matrix interferences, sample availability, or method

requirements (see Table 2), the spiked amount will remain constant and therefore the spike concentration will change.

In summary, no MS/MSD is performed for SW8290 sample analyses (unless specifically requested by the client), and batch control will be done by the recovery of the spiked, isotopically labeled, analogs in the method blanks and LCSs. See Appendix A for specific QC control.

Toxicity Equivalence Factors (TEFs)

As per client request, the 2,3,7,8-TCDD toxicity equivalence will be calculated in accordance with the procedures given in U.S. EPA "Update of Toxicity Equivalence Factors (TEFs) for Estimating Risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-Dioxins and Dibenzofurans (CDDs/CDFs)" March 1989 (EPA 625/3-89/016) and as described in the U.S. EPA Contract Laboratory Program Statement of Work, DFLM01.0. TEFs are assigned to each of the 2,3,7,8-substituted PCDDs/PCDFs in order to relate their toxicity to that of 2,3,7,8-TCDD. See Table B for the factors used to calculate TEFs. Note that EDL and detection limit values are not normally included in the TEF adjusted concentration. Second column confirmation will be performed only for 2,3,7,8-TCDF presumptive positives > TDL.

Quanterra Reference Data Summary

Target Analyte List: Q: 2378 Isomers & Tot PCDDs/PCDFs HR Standard List

Matrix: WATER
Extraction: None specified.
Method: Dioxins/Furans, HRGC/HRMS (8290)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 2515		Detection Limits				Check List 20203					Spike List 20204				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,2,3,4,6,7,8-HpCDD		pg/L	3.93	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total HpCDD		pg/L	0	pg/L	19990305										
1,2,3 4,6,7,8-HpCDF		pg/L	3.92	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
1,2,3 4,7,8,9-HpCDF		pg/L	5.08	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total HpCDF		pg/L	0	pg/L	19990305										
1,2,3 7,8,9-HxCDD		pg/L	7.76	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
1,2,3 4,7,8-HxCDD		pg/L	7.28	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
1,2,3,6,7,8-HxCDD		pg/L	6.20	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total HxCDD		pg/L	0	pg/L	19990305										
1,2,3,4,7,8-HxCDF		pg/L	4.01	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
1,2,3,6,7,8-HxCDF		pg/L	7.10	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
1,2,3,7,8,9-HxCDF		pg/L	8.01	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
2,3,4,6,7,8-HxCDF		pg/L	6.11	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total HxCDF		pg/L	0	pg/L	19990305										
OCDD		pg/L	15.59	pg/L	19980814	2000	pg/L	50	150	50	2000	pg/L	50	150	50
OCDF		pg/L	11.88	pg/L	19980814	2000	pg/L	50	150	50	2000	pg/L	50	150	50
1,2,3,7,8-PeCDD		pg/L	6.59	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total PeCDD		pg/L	0	pg/L	19990305										
1,2,3,7,8-PeCDF		pg/L	6.00	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
2,3,4,7,8-PeCDF		pg/L	4.90	pg/L	19980814	1000	pg/L	50	150	50	1000	pg/L	50	150	50
Total PeCDF		pg/L	0	pg/L	19990305										
2,3,7,8-TCDD		pg/L	1.21	pg/L	19980814	200	pg/L	50	150	50	200	pg/L	50	150	50
Total TCDD		pg/L	0	pg/L	19990305										
2,3,7,8-TCDF		pg/L	1.92	pg/L	19980814	200	pg/L	50	150	50	200	pg/L	50	150	50
Total TCDF		pg/L	0	pg/L	19990305										

Quanterra Reference Data Summary

Target Analyte List: Q: 2378 Isomers & Tot PCDDs/PCDFs HR Standard List

Matrix: SOLID
Extraction: None specified.
Method: Dioxins/Furans, HRGC/HRMS (8290)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 2515		Detection Limits				Check List 20203					Spike List 20204				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,2,3,4,6,7,8-HpCDD		pg/g	0.250	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total HpCDD		pg/g	--	pg/g	19990306										
1,2,3,4,6,7,8-HpCDF		pg/g	0.250	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
1,2,3,4,7,8,9-HpCDF		pg/g	0.259	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total HpCDF		pg/g	--	pg/g	19990306										
1,2,3,7,8,9-HxCDD		pg/g	0.337	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
1,2,3,4,7,8-HxCDD		pg/g	0.506	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
1,2,3,6,7,8-HxCDD		pg/g	0.348	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total HxCDD		pg/g	--	pg/g	19990306										
1,2,3,4,7,8-HxCDF		pg/g	0.290	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
1,2,3,6,7,8-HxCDF		pg/g	0.250	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
1,2,3,7,8,9-HxCDF		pg/g	0.338	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
2,3,4,6,7,8-HxCDF		pg/g	0.347	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total HxCDF		pg/g	--	pg/g	19990306										
OCDD		pg/g	0.991	pg/g	19970930	200	pg/g	50	150	50	200	pg/g	50	150	50
OCDF		pg/g	0.500	pg/g	19970930	200	pg/g	50	150	50	200	pg/g	50	150	50
1,2,3,7,8-PeCDD		pg/g	0.250	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total PeCDD		pg/g	--	pg/g	19990306										
1,2,3,7,8-PeCDF		pg/g	0.250	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
2,3,4,7,8-PeCDF		pg/g	0.305	pg/g	19970930	100	pg/g	50	150	50	100	pg/g	50	150	50
Total PeCDF		pg/g	--	pg/g	19990306										
2,3,7,8-TCDD		pg/g	0.123	pg/g	19970930	20	pg/g	50	150	50	20	pg/g	50	150	50
Total TCDD		pg/g	--	pg/g	19990306										
2,3,7,8-TCDF		pg/g	0.067	pg/g	19970930	20	pg/g	50	150	50	20	pg/g	50	150	50
Total TCDF		pg/g	--	pg/g	19990306										

TABLE 1 REPORTING LIMITS FOR QUANTERRA, INCORPORATED (West Sacramento)

Parameter	Method	Analyte	Water[1] pg/L	Soil[2] pg/g
Dioxins/Furans	SW8290	Dioxins		
		2,3,7,8-TCDD	10	1.0
		1,2,3,7,8-PeCDD	50	5.0
		1,2,3,4,7,8-HxCDD	50	5.0
		1,2,3,6,7,8-HxCDD	50	5.0
		1,2,3,7,8,9-HxCDD	50	5.0
		1,2,3,4,6,7,8-HpCDD	50	5.0
		OCDD	100	10
		Furans		
		2,3,7,8-TCDF	10	1.0
		1,2,3,7,8-PeCDF	50	5.0
		2,3,4,7,8-PeCDF	50	5.0
		1,2,3,4,7,8-HxCDF	50	5.0
		1,2,3,6,7,8-HxCDF	50	5.0
		1,2,3,7,8,9-HxCDF	50	5.0
		2,3,4,6,7,8-HxCDF	50	5.0
		1,2,3,4,6,7,8-HpCDF	50	5.0
		1,2,3,4,7,8,9-HpCDF	50	5.0
		OCDF	100	10

Note: "Totals" values are available upon client request.

[1] = Based upon 1 liter sample aliquot. Sensitivity of the method depends on the level of interferences rather than instrumental limitations. Typical waste samples may have higher reporting limits and may require additional cleanup techniques.
[2] = Based upon 10 gram sample aliquot. Maximum CRQLs for samples "as received." Correction for moisture content may raise reporting limits above these levels. Typical waste samples may have higher reporting limits and may require additional cleanup techniques.

TABLE 2 QUANTERRA INC. (West Sacramento) LABORATORY CONTROL LIMITS FOR MATRIX SPIKES, MATRIX SPIKE DUPLICATES, AND LABORATORY CONTROL SAMPLES

		Spike Amount		Laboratory-Established Control Limits			
				Percent Recovery (%)		Relative Percent Difference (%)	
Analytical Method	Spiking Compounds	Water (pg/L)	Soil/Sediments (pg/g)	Water	Soil/Sediments	Water	Soil/Sediments
SW8290	2,3,7,8-TCDD	200	20	50-150	50-150	50	50
	2,3,7,8-TCDF	200	20	50-150	50-150	50	50
	1,2,3,7,8-PeCDD	1000	100	50-150	50-150	50	50
	1,2,3,7,8-PeCDF	1000	100	50-150	50-150	50	50
	2,3,4,7,8-PeCDF	1000	100	50-150	50-150	50	50
	1,2,3,4,7,8-HxCDD	1000	100	50-150	50-150	50	50
	1,2,3,6,7,8-HxCDD	1000	100	50-150	50-150	50	50
	1,2,3,7,8,9-HxCDD	1000	100	50-150	50-150	50	50
	1,2,3,4,7,8-HxCDF	1000	100	50-150	50-150	50	50
	1,2,3,6,7,8-HxCDF	1000	100	50-150	50-150	50	50
	1,2,3,7,8,9-HxCDF	1000	100	50-150	50-150	50	50
	2,3,4,6,7,8-HxCDF	1000	100	50-150	50-150	50	50
	1,2,3,4,6,7,8-HpCDD	1000	100	50-150	50-150	50	50
	1,2,3,4,6,7,8-HpCDF	1000	100	50-150	50-150	50	50
	1,2,3,4,7,8,9-HpCDF	1000	100	50-150	50-150	50	50
	OCDD	2000	200	50-150	50-150	50	50
	OCDF	2000	200	50-150	50-150	50	50
(d)(f)	^{13}C-2,3,7,8-TCDD	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,7,8-PeCDD	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,7,8-PeCDF	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-2,3,7,8-TCDF	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,6,7,8-HxCDD	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,4,7,8-HxCDF	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,4,6,7,8-HpCDD	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-1,2,3,4,6,7,8-HpCDF	2000	200	40-135	40-135	N/A	N/A
(d)(f)	^{13}C-OCDD	4000	400	40-135	40-135	N/A	N/A

(d) = Method default control limits. Signal-to-noise is also evaluated for data acceptability.
(f) = These labelled analytes are spiked into all samples.
Control limits are subject to change. Control limits effective as of April 1999. (RH 6/1/99)

TABLE 3 QUANTERRA INC. (West Sacramento) SUMMARY OF CALIBRATION PROCEDURES

Method	Parameter	Calibration	Frequency	Acceptance Criteria	Corrective Action
SW8290 (GC/MS)	Dioxins/Furans	Tune using PFK.	Once per 12 hours, prior to sample analysis.	Resolving power ≥ 10,000 at m/z=304.9824 & m/z 380.9760 ± 5 ppm of expected mass.	1) Retune instrument. 2) Reanalyze PFK.
		Window defining mix (WDM) Column Performance Check Solution (CPSM)	Prior to ICAL, once per 12 hours prior to sample analysis.	Used to set retention times. CPSM must have ≤ 25% valley resolution for 2378-TCDD.	1) Readjust windows. 2) Evaluate system. 3) Perform maintenance. 4) Reanalyze WDM/CPSM.
		Multipoint calibration (5 points, ICAL).	Initially and as required.	Int. std = %RSD≤30% Natives = %RSD≤20% Retention time must be within -1 to +3 seconds of labelled IS or 0.005 RRT units. Ion ratios within Table A limits, and S/N ≥ 2.5	1) Evaluate system. 2) Recalibrate.
		Daily continuing calibration standard (CCAL).	Once per 12 hours, prior to sample analysis	%D of IS ≤ 30% from avg. RRF (ICAL). %D of natives ≤ 20% from avg. RRF (ICAL). RT must be within -1 to +3 seconds of labelled IS or 0.005 RRT units. Ion ratios are within Table A limits.	1) Evaluate system. 2) Reanalyze CCAL. 3) Recalibrate (ICAL) as necessary.

TABLE 4 QUANTERRA INC. (West Sacramento) SUMMARY OF INTERNAL QUALITY CONTROL PROCEDURES

Method	Parameter	QC Element	Frequency	Acceptance Criteria	Corrective Action
SW8290(GC/HRMS)	Dioxins/Furans	Internal standards	Every sample, method blank, and LCS	1) Internal standard recovery within limits stated in Table 2.	1) Check chromatogram for interference. If found, flag data. 2) Check instrument and reanalyze the extract if a problem is found and corrected. 3) Check S/N. If < 10:1, reextract sample. 4) Evaluate data useability and flag as appropriate. 5) Reextract and reanalyze adversely affected samples.
		Method blank	1 per analytical batch, not to exceed 20 samples, per matrix.	Ratio of a given unlabelled PCDD/PCDF isomer ≤ 5% of the appropriate internal standard.	1) Reanalyze method blank. 2) If still exceeds and analyte conc. concentration in sample < CRQL or > 10x blank concentration, report results. 3) If noncompliant and analyte concentration in sample is between CRQL and 10x blank concentration, reextract and reanalyze affected samples.
		LCS (include natives.)	1 per analytical batch, not to exceed 20 samples, per matrix.	Refer to Table 2.	1) Review Internal Standards, as above. 2) Evaluate data for usability. 3) If sample results are ND and CRQLs are met, no action required. 4) If samples have positives, reextract and reanalyze samples for analytes outside the acceptance criteria.
		Duplicates	As per client request.	%RPD ≤ 50%	1) Review data for usability. 2) Narrate outliers.
		Matrix Spike	As per client request.	Refer to Table 2.	1) Review data for usability. 2) Narrate outliers.
		Matrix Spike Duplicate.	As per client request.	Refer to Table 2.	1) Review data for usability. 2) Narrate outliers.

TABLE A CRITERIA FOR ISOTOPIC RATIO MEASUREMENTS FOR PCDDS AND PCDFS BY 8290

Number of Chlorine Atoms	Ion Type	Theoretical Ratio	Control Limits
4	M/(M+2)	0.77	0.65-0.89
5	(M+2)/(M+4)	1.55	1.32-1.78
6	(M+2)/(M+4)	1.24	1.05-1.43
6[a]	M/(M+2)	0.51	0.43-0.59
7[b]	M/(M+2)	0.44	0.37-0.51
7	(M+2)/(M+4)	1.04	0.88-1.20
8	(M+2)/(M+4)	0.89	0.76-1.02

[a] Used only for ^{13}C-HxCDF (internal standard).

[b] Used only for ^{13}C-HpCDF (internal standard).

TABLE B PCDD/PCDF TOXICITY EQUIVALENCE FACTORS (TEF)

Analyte	TEF
2,3,7,8-TCDD	1.0
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.05
1,2,3,7,8-PeCDD	0.5
2,3,4,7,8-PeCDF	0.5
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
2,3,4,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.01
1,2,3,4,6,7,8-HpCDD	0.01
1,2,3,4,7,8,9-HpCDF	0.01
OCDD	0.001
OCDF	0.001

Quanterra Reference Data Summary

Target Analyte List: SAC: MET 6010B Seed Std List

Matrix: WATER
Extraction: None specified.
Method: Inductively Coupled Plasma (6010B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20901	Detection Limits					Check List 20900					Spike List 20901				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Aluminum	0.20	mg/L	0.043	mg/L	19980430	2.0	mg/L	81	119	20	2.0	mg/L	81	119	20
Antimony	0.06	mg/L	0.031	mg/L	19980430	0.50	mg/L	79	125	20	0.50	mg/L	79	125	20
Arsenic	0.30	mg/L	0.043	mg/L	19980430	2.0	mg/L	80	118	20	2.0	mg/L	80	118	20
Barium	0.20	mg/L	0.00043	mg/L	19980430	2.0	mg/L	88	108	20	2.0	mg/L	88	108	20
Beryllium	0.005	mg/L	0.00009	mg/L	19980430	0.05	mg/L	85	119	20	0.05	mg/L	85	119	20
Boron	0.20	mg/L	0.011	mg/L	19980430	1.0	mg/L	89	109	20	1.0	mg/L	89	109	20
Cadmium	0.005	mg/L	0.0031	mg/L	19980430	0.050	mg/L	76	118	20	0.050	mg/L	76	118	20
Calcium	5.0	mg/L	0.027	mg/L	19980430	50	mg/L	79	123	20	50	mg/L	79	123	20
Chromium	0.01	mg/L	0.0028	mg/L	19980430	0.20	mg/L	76	126	20	0.20	mg/L	76	126	20
Chromium (total)			0.0028	mg/L	19980430										
Cobalt	0.05	mg/L	0.0074	mg/L	19980430	0.50	mg/L	77	113	20	0.50	mg/L	77	113	20
Copper	0.025	mg/L	0.0021	mg/L	19980430	0.25	mg/L	87	107	20	0.25	mg/L	87	107	20
Iron	0.10	mg/L	0.0039	mg/L	19980430	1.0	mg/L	90	110	20	1.0	mg/L	90	110	20
Lead	0.10	mg/L	0.031	mg/L	19980430	0.5	mg/L	79	115	20	0.5	mg/L	79	115	20
Lithium	0.05	mg/L	0.0026	mg/L	19980430	1.0	mg/L	87	107	20	1.0	mg/L	87	107	20
Magnesium	5.0	mg/L	0.025	mg/L	19980430	50	mg/L	76	116	20	50	mg/L	76	116	20
Manganese	0.015	mg/L	0.00069	mg/L	19980430	0.50	mg/L	87	113	20	0.50	mg/L	87	113	20
Molybdenum	0.04	mg/L	0.0046	mg/L	19980430	1.0	mg/L	79	121	20	1.0	mg/L	79	121	20
Nickel	0.04	mg/L	0.016	mg/L	19980430	0.50	mg/L	83	117	20	0.50	mg/L	83	117	20
Phosphorus	0.3	mg/L	0.12	mg/L	19980430	10	mg/L	80	120	20	10	mg/L	80	120	20
Potassium	5.0	mg/L	0.6	mg/L	19980430	50	mg/L	85	105	20	50	mg/L	85	105	20
Selenium	0.25	mg/L	0.051	mg/L	19980430	2.0	mg/L	82	126	20	2.0	mg/L	82	126	20
Silicon	0.5	mg/L	0.005	mg/L	19980430	10	mg/L	80	120	20	10	mg/L	80	120	20
Silver	0.01	mg/L	0.0032	mg/L	19980430	0.05	mg/L	73	127	20	0.05	mg/L	73	127	20
Sodium	5.0	mg/L	0.036	mg/L	19980430	50	mg/L	82	108	20	50	mg/L	82	108	20
Strontium	0.05	mg/L	0.00033	mg/L	19980430	1.0	mg/L	80	120	20	1.0	mg/L	80	120	20
Sulfur	0.1	mg/L	0.035	mg/L	19980430	10	mg/L	80	120	20	10	mg/L	80	120	20
Thallium	2.0	mg/L	0.053	mg/L	19980430	2.0	mg/L	76	128	20	2.0	mg/L	76	128	20
Tin	0.10	mg/L	0.022	mg/L	19980430	2.0	mg/L	87	107	20	2.0	mg/L	87	107	20
Titanium	0.05	mg/L	0.0017	mg/L	19980430	1.0	mg/L	90	110	20	1.0	mg/L	90	110	20
Vanadium	0.05	mg/L	0.0032	mg/L	19980430	0.50	mg/L	75	115	20	0.50	mg/L	75	115	20
Zinc	0.02	mg/L	0.0021	mg/L	19980430	0.50	mg/L	71	121	20	0.50	mg/L	71	121	20

Quanterra Reference Data Summary

Target Analyte List: SAC: MET 6010B TRACE STD. LIST

Matrix: SOLID
Extraction: None specified.
Method: Inductively Coupled Plasma (6010B Trace)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20904			Detection Limits			Check List 20908					Spike List 20909				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Antimony	1.0	mg/kg	0.16	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Arsenic	1.0	mg/kg	0.28	mg/kg	19980309	200	mg/kg	80	120	35	200	mg/kg	80	120	35
Barium	1.0	mg/kg	0.02	mg/kg	19980309	200	mg/kg	80	120	35	200	mg/kg	80	120	35
Beryllium	0.5	mg/kg	0.01	mg/kg	19980309	5.0	mg/kg	80	120	35	5.0	mg/kg	80	120	35
Cadmium	0.5	mg/kg	0.03	mg/kg	19980309	5.0	mg/kg	80	120	35	5.0	mg/kg	80	120	35
Chromium	0.5	mg/kg	0.08	mg/kg	19980309	20	mg/kg	80	120	35	20	mg/kg	80	120	35
Cobalt	5.0	mg/kg	0.09	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Copper	2.5	mg/kg	0.09	mg/kg	19980309	25	mg/kg	80	120	35	25	mg/kg	80	120	35
Iron	10	mg/kg	1.26	mg/kg	19980309	100	mg/kg	80	120	35	100	mg/kg	80	120	35
Lead	0.5	mg/kg	0.15	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Manganese	1.5	mg/kg	0.01	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Molybdenum	4.0	mg/kg	0.16	mg/kg	19980309	100	mg/kg	80	120	35	100	mg/kg	80	120	35
Nickel	4.0	mg/kg	0.07	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Selenium	0.5	mg/kg	0.29	mg/kg	19980309	200	mg/kg	80	120	35	200	mg/kg	80	120	35
Silver	0.5	mg/kg	0.11	mg/kg	19980309	5.0	mg/kg	80	120	35	5.0	mg/kg	80	120	35
Thallium	1.0	mg/kg	0.39	mg/kg	19980309	200	mg/kg	80	120	35	200	mg/kg	80	120	35
Vanadium	5.0	mg/kg	0.04	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35
Zinc	2.0	mg/kg	0.06	mg/kg	19980309	50	mg/kg	80	120	35	50	mg/kg	80	120	35

Quanterra Reference Data Summary

Target Analyte List: SAC: MET 6010B TRACE STD. LIST

Matrix: WATER
Extraction: None specified.
Method: Inductively Coupled Plasma (6010B Trace)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20904	Detection Limits					Check List 20908					Spike List 20909				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Antimony	0.01	mg/L	0.0022	mg/L	19980309	0.50	mg/L	80	120	20	0.50	mg/L	80	120	20
Arsenic	0.01	mg/L	0.0042	mg/L	19980309	2.0	mg/L	80	118	20	2.0	mg/L	80	118	20
Barium	0.01	mg/L	0.00014	mg/L	19980309	2.0	mg/L	88	108	20	2.0	mg/L	88	108	20
Beryllium	0.005	mg/L	0.00005	mg/L	19980309	0.050	mg/L	85	119	20	0.050	mg/L	85	119	20
Cadmium	0.005	mg/L	0.00037	mg/L	19980309	0.050	mg/L	76	118	20	0.050	mg/L	76	118	20
Chromium	0.005	mg/L	0.00051	mg/L	19980309	0.20	mg/L	76	126	20	0.20	mg/L	76	126	20
Cobalt	0.05	mg/L	0.00088	mg/L	19980309	0.50	mg/L	77	113	20	0.50	mg/L	77	113	20
Copper	0.025	mg/L	0.00062	mg/L	19980309	0.25	mg/L	87	107	20	0.25	mg/L	87	107	20
Iron	0.1	mg/L	0.1	mg/L	19980430	1.0	mg/L	80	120	20	1.0	mg/L	80	120	20
Lead	0.005	mg/L	0.0018	mg/L	19980309	0.5	mg/L	79	115	20	0.5	mg/L	79	115	20
Manganese	0.015	mg/L	0.00047	mg/L	19980309	0.5	mg/L	87	113	20	0.5	mg/L	87	113	20
Molybdenum	0.04	mg/L	0.0015	mg/L	19980309	1.0	mg/L	79	121	20	1.0	mg/L	79	121	20
Nickel	0.04	mg/L	0.0012	mg/L	19980309	0.50	mg/L	83	117	20	0.50	mg/L	83	117	20
Selenium	0.005	mg/L	0.0032	mg/L	19980309	2.0	mg/L	82	126	20	2.0	mg/L	82	126	20
Silver	0.005	mg/L	0.00099	mg/L	19980309	0.050	mg/L	73	127	20	0.050	mg/L	73	127	20
Thallium	0.01	mg/L	0.003	mg/L	19980309	2.0	mg/L	76	128	20	2.0	mg/L	76	128	20
Vanadium	0.05	mg/L	0.00089	mg/L	19980309	0.50	mg/L	75	115	20	0.50	mg/L	75	115	20
Zinc	0.02	mg/L	0.0024	mg/L	19980309	0.50	mg/L	71	121	20	0.50	mg/L	71	121	20

Quanterra Reference Data Summary

Target Analyte List: All Analytes

Matrix: SOLID
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Acetone	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Acetonitrile	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Acrolein	100	ug/kg	50	ug/kg	19980701	500	ug/kg	70	130	35	500	ug/kg	70	130	35
Acrylonitrile	100	ug/kg	50	ug/kg	19980701	500	ug/kg	70	130	35	500	ug/kg	70	130	35
Benzene	5.0	ug/kg	0.73	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Bromobenzene	5.0	ug/kg	0.52	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Bromochloromethane	5.0	ug/kg	0.94	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Bromodichloromethane	5.0	ug/kg	0.53	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Bromoform	5.0	ug/kg	4.1	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Bromomethane	5.0	ug/kg	0.86	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
t-Butanol	250	ug/kg	125	ug/kg	19990111	1250	ug/kg	70	130	35	1250	ug/kg	70	130	35
2-Butanone (MEK)	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
n-Butylbenzene	5.0	ug/kg	0.66	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
sec-Butylbenzene	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
tert-Butylbenzene	5.0	ug/kg	0.54	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Carbon disulfide	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Carbon tetrachloride	5.0	ug/kg	0.53	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Chlorobenzene	5.0	ug/kg	0.79	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Chloroprene	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Chlorodibromomethane	5.0	ug/kg	2.7	ug/kg	19980701										
Dibromochloromethane	5.0	ug/kg	2.7	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Chloroethane	5.0	ug/kg	2.6	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
2-Chloroethyl vinyl ether	10	ug/kg	5.0	ug/kg	19990111	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Chloroform	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1-Chlorohexane	10	ug/kg	5.0	ug/kg	19990111	50	ug/L	70	130	35	50	ug/kg	70	130	35
Chloromethane	5.0	ug/kg	1.5	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Allyl chloride	5.0	ug/kg	2.5	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
2-Chlorotoluene	5.0	ug/kg	0.62	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
4-Chlorotoluene	5.0	ug/kg	0.86	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2-Dibromo-3-chloropropane	10	ug/kg	7.2	ug/kg	19980701										
1,2-Dibromo-3-chloropropane (DBCP)	10	ug/kg	7.2	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2-Dibromoethane	10	ug/kg	0.79	ug/kg	19980701										
1,2-Dibromoethane (EDB)	10	ug/kg	0.79	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Dibromomethane	5.0	ug/kg	0.58	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2-Dichlorobenzene	5.0	ug/kg	0.64	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,3-Dichlorobenzene	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35

Target Analyte List: All Analytes

Matrix: SOLID
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,4-Dichlorobenzene	5.0	ug/kg	0.78	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
trans-1,4-Dichloro-2-butene	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Dichlorodifluoromethane	5.0	ug/kg	0.89	ug/kg	19980701										
Dichlorodifluoromethane (Freon 12)	5.0	ug/kg	0.89	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1-Dichloroethane	5.0	ug/kg	0.76	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2-Dichloroethane	5.0	ug/kg	0.73	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
cis-1,2-Dichloroethene	5.0	ug/kg	0.89	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
trans-1,2-Dichloroethene	5.0	ug/kg	0.91	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1-Dichloroethene	5.0	ug/kg	1.2	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2-Dichloroethene (total)	5.0	ug/kg	0.0	ug/kg	19980701										
1,2-Dichloropropane	5.0	ug/kg	0.60	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,3-Dichloropropane	5.0	ug/kg	0.57	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
2,2-Dichloropropane	5.0	ug/kg	1.1	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
cis-1,3-Dichloropropene	5.0	ug/kg	0.64	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
trans-1,3-Dichloropropene	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1-Dichloropropene	5.0	ug/kg	0.86	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,4-Dioxane	250	ug/kg	125	ug/kg	19980701	1250	ug/kg	70	130	35	1250	ug/kg	70	130	35
Tert-amyl methyl ether	10	ug/kg	5.0	ug/kg	19990113	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Tert-butyl ethyl ether	10	ug/kg	5.0	ug/kg	19990113	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Ethylbenzene	5.0	ug/kg	0.86	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Ethyl methacrylate	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Hexachlorobutadiene	5.0	ug/kg	0.89	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Hexane	10	ug/kg	5.0	ug/kg	19990111	50	ug/kg	70	130	35	50	ug/kg	70	130	35
2-Hexanone	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Iodomethane	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Isobutyl alcohol	100	ug/kg	50	ug/kg	19980701	500	ug/kg	70	130	35	500	ug/kg	70	130	35
Isopropylbenzene	5.0	ug/kg	0.52	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Isopropyl ether	10	ug/kg	5.0	ug/kg	19990111	50	ug/kg	70	130	35	50	ug/kg	70	130	35
p-Isopropyltoluene	5.0	ug/kg	0.63	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Methacrylonitrile	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Methylene chloride	10	ug/kg	0.84	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Methyl methacrylate	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
4-Methyl-2-pentanone (MIBK)	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Methyl tert-butyl ether (MTBE)	10	ug/kg	5.0	ug/kg	19990111	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Naphthalene	5.0	ug/kg	0.63	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Propionitrile	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
n-Propylbenzene	5.0	ug/kg	0.90	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Styrene	5.0	ug/kg	0.76	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1,1,2-Tetrachloroethane	5.0	ug/kg	3.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35

Target Analyte List: All Analytes

Matrix: SOLID
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,1,2,2-Tetrachloroethane	5.0	ug/kg	0.68	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Tetrachloroethene	5.0	ug/kg	0.61	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Toluene	5.0	ug/kg	0.61	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2,3-Trichlorobenzene	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2,4-Trichlorobenzene	5.0	ug/kg	0.75	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1,1-Trichloroethane	5.0	ug/kg	0.80	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1,2-Trichloroethane	5.0	ug/kg	2.9	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Trichloroethene	5.0	ug/kg	0.60	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Trichlorofluoromethane	5.0	ug/kg	0.80	ug/kg	19980701										
Trichlorofluoromethane (Freon 11)	5.0	ug/kg	0.80	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2,3-Trichloropropane	5.0	ug/kg	0.76	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,1,2-Trichloro-1,2,2-trifluoroethane (F	10	ug/kg	5.0	ug/kg	19990111	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,2,4-Trimethylbenzene	5.0	ug/kg	0.51	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
1,3,5-Trimethylbenzene	5.0	ug/kg	2.4	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Vinyl acetate	10	ug/kg	5.0	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Vinyl chloride	5.0	ug/kg	1.6	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
m-Xylene & p-Xylene	5.0	ug/kg	0.81	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
o-Xylene	5.0	ug/kg	2.7	ug/kg	19980701	50	ug/kg	70	130	35	50	ug/kg	70	130	35
Xylenes (total)	5.0	ug/kg	0.0	ug/kg	19980701										
4-Bromofluorobenzene						50	ug/kg	70	130	0	50	ug/kg	70	130	0
1,2-Dichloroethane-d4						50	ug/kg	70	130	0	50	ug/kg	70	130	0
Toluene-d8						50	ug/kg	70	130	0	50	ug/kg	70	130	0

Quanterra Reference Data Summary

Target Analyte List: All Analytes

Matrix: WATER
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Acetone	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Acetonitrile	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Acrolein	20	ug/L	10	ug/L	19980522	100	ug/L	70	130	35	100	ug/L	70	130	35
Acrylonitrile	20	ug/L	10	ug/L	19980522	100	ug/L	70	130	35	100	ug/L	70	130	35
Benzene	1.0	ug/L	0.13	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Bromobenzene	1.0	ug/L	0.18	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Bromochloromethane	1.0	ug/L	0.31	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Bromodichloromethane	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Bromoform	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Bromomethane	1.0	ug/L	0.08	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
t-Butanol	50	ug/L	25	ug/L	19990111	250	ug/L	70	130	35	250	ug/L	70	130	35
2-Butanone (MEK)	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
n-Butylbenzene	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
sec-Butylbenzene	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
tert-Butylbenzene	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Carbon disulfide	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Carbon tetrachloride	1.0	ug/L	0.15	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Chlorobenzene	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Chloroprene	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Chlorodibromomethane	1.0	ug/L	0.40	ug/L	19980522										
Dibromochloromethane	1.0	ug/L	0.40	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Chloroethane	1.0	ug/L	0.34	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
2-Chloroethyl vinyl ether	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
Chloroform	1.0	ug/L	0.72	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1-Chlorohexane	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
Chloromethane	1.0	ug/L	0.25	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Allyl chloride	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
2-Chlorotoluene	1.0	ug/L	0.26	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
4-Chlorotoluene	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2-Dibromo-3-chloropropane	2.0	ug/L	0.95	ug/L	19980522										
1,2-Dibromo-3-chloropropane (DBCP)	2.0	ug/L	0.95	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2-Dibromoethane	2.0	ug/L	0.22	ug/L	19980522										
1,2-Dibromoethane (EDB)	2.0	ug/L	0.22	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Dibromomethane	1.0	ug/L	0.21	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2-Dichlorobenzene	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,3-Dichlorobenzene	1.0	ug/L	0.11	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35

Target Analyte List: All Analytes

Matrix: WATER
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,4-Dichlorobenzene	1.0	ug/L	0.13	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
trans-1,4-Dichloro-2-butene	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Dichlorodifluoromethane	1.0	ug/L	0.16	ug/L	19980522										
Dichlorodifluoromethane (Freon 12)	1.0	ug/L	0.16	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1-Dichloroethane	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2-Dichloroethane	1.0	ug/L	0.22	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
cis-1,2-Dichloroethene	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
trans-1,2-Dichloroethene	1.0	ug/L	0.11	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1-Dichloroethene	1.0	ug/L	0.36	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2-Dichloroethene (total)	1.0	ug/L	0.0	ug/L	19980522										
1,2-Dichloropropane	1.0	ug/L	0.15	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,3-Dichloropropane	1.0	ug/L	0.20	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
2,2-Dichloropropane	1.0	ug/L	0.13	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
cis-1,3-Dichloropropene	1.0	ug/L	0.22	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
trans-1,3-Dichloropropene	1.0	ug/L	0.30	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1-Dichloropropene	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,4-Dioxane	50	ug/L	25	ug/L	19980522	250	ug/L	70	130	35	250	ug/L	70	130	35
Tert-amyl methyl ether	2.0	ug/L	1.0	ug/L	19990113	10	ug/L	70	130	35	10	ug/L	70	130	35
Tert-butyl ethyl ether	2.0	ug/L	1.0	ug/L	19990113	10	ug/L	70	130	35	10	ug/L	70	130	35
Ethylbenzene	1.0	ug/L	0.27	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Ethyl methacrylate	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Hexachlorobutadiene	1.0	ug/L	0.22	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Hexane	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
2-Hexanone	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Iodomethane	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Isobutyl alcohol	20	ug/L	10	ug/L	19980522	100	ug/L	70	130	35	100	ug/L	70	130	35
Isopropylbenzene	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Isopropyl ether	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
p-Isopropyltoluene	1.0	ug/L	0.13	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Methacrylonitrile	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Methylene chloride	1.0	ug/L	0.35	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Methyl methacrylate	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
4-Methyl-2-pentanone (MIBK)	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Methyl tert-butyl ether (MTBE)	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
Naphthalene	1.0	ug/L	0.15	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Propionitrile	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
n-Propylbenzene	1.0	ug/L	0.15	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Styrene	1.0	ug/L	0.15	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1,1,2-Tetrachloroethane	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35

Target Analyte List: All Analytes

Matrix: WATER
Extraction: None specified.
Method: Volatile Organics, GC/MS (8260B)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20503					Spike List 20504				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,1,2,2-Tetrachloroethane	1.0	ug/L	0.37	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Tetrachloroethene	1.0	ug/L	0.38	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Toluene	1.0	ug/L	0.25	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2,3-Trichlorobenzene	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2,4-Trichlorobenzene	1.0	ug/L	0.23	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1,1-Trichloroethane	1.0	ug/L	0.41	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1,2-Trichloroethane	1.0	ug/L	0.31	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Trichloroethene	1.0	ug/L	0.31	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Trichlorofluoromethane	1.0	ug/L	0.23	ug/L	19980522										
Trichlorofluoromethane (Freon 11)	1.0	ug/L	0.23	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2,3-Trichloropropane	1.0	ug/L	0.30	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,1,2-Trichloro-1,2,2-trifluoroethane	2.0	ug/L	1.0	ug/L	19990111										
1,1,2-Trichloro-1,2,2-trifluoroethane (F	2.0	ug/L	1.0	ug/L	19990111	10	ug/L	70	130	35	10	ug/L	70	130	35
1,2,4-Trimethylbenzene	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
1,3,5-Trimethylbenzene	1.0	ug/L	0.14	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Vinyl acetate	2.0	ug/L	1.0	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Vinyl chloride	1.0	ug/L	0.12	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
m-Xylene & p-Xylene	1.0	ug/L	0.18	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
o-Xylene	1.0	ug/L	0.10	ug/L	19980522	10	ug/L	70	130	35	10	ug/L	70	130	35
Xylenes (total)	1.0	ug/L	0.0	ug/L	19980511										
4-Bromofluorobenzene						10	ug/L	70	130	0	10	ug/L	70	130	0
1,2-Dichloroethane-d4						10	ug/L	70	130	0	10	ug/L	70	130	0
Toluene-d8						10	ug/L	70	130	0	10	ug/L	70	130	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: SOLID
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
a,a-Dimethylphenethylamine	1600	ug/kg	800	ug/kg	19980218										
Acenaphthene	330	ug/kg	41	ug/kg	19980218	3330	ug/kg	42	125	10	3330	ug/kg	42	125	10
Acenaphthylene	330	ug/kg	30	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Acetophenone	330	ug/kg	165	ug/kg	19980218										
2-Acetylaminofluorene	3300	ug/kg	1650	ug/kg	19980218										
4-Aminobiphenyl	1600	ug/kg	800	ug/kg	19980218										
Aniline	330	ug/kg	165	ug/kg	19980218										
Anthracene	330	ug/kg	54	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Aramite	660	ug/kg	330	ug/kg	19980218										
Azobenzene	330	ug/kg	165	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzidine	3300	ug/kg	1650	ug/kg	19980218										
Benzo(a)anthracene	330	ug/kg	26	ug/kg	19980218										
Benzo(b)fluoranthene	330	ug/kg	48	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzo(k)fluoranthene	330	ug/kg	57	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzoic acid	1600	ug/kg	250	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzo(ghi)perylene	330	ug/kg	56	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzo(a)pyrene	330	ug/kg	40	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Benzyl alcohol	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
bis(2-Chloroethoxy)methane	330	ug/kg	30	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
bis(2-Chloroethyl) ether	330	ug/kg	33	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
bis(2-Ethylhexyl) phthalate	330	ug/kg	43	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
4-Bromophenyl phenyl ether	330	ug/kg	47	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Butyl benzyl phthalate	330	ug/kg	27	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Carbazole	330	ug/kg	165	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
4-Chloroaniline	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Chlorobenzilate	330	ug/kg	165	ug/kg	19980218										
4-Chloro-3-methylphenol	330	ug/kg	85	ug/kg	19980218	3330	ug/kg	42	115	12	3330	ug/kg	42	115	12
2-Chloronaphthalene	330	ug/kg	20	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2-Chlorophenol	330	ug/kg	52	ug/kg	19980218	3330	ug/kg	42	116	12	3330	ug/kg	42	116	12
4-Chlorophenyl phenyl ether	330	ug/kg	36	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Chrysene	330	ug/kg	67	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Diallate	660	ug/kg	330	ug/kg	19980218										
Dibenz(a,j)acridine	660	ug/kg	330	ug/kg	19980218										
Dibenz(a,h)anthracene	330	ug/kg	52	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Dibenzofuran	330	ug/kg	56	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Di-n-butyl phthalate	330	ug/kg	62	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: SOLID
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,2-Dichlorobenzene	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
1,3-Dichlorobenzene	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
1,4-Dichlorobenzene	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	36	117	12	3330	ug/kg	36	117	12
3,3'-Dichlorobenzidine	1600	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2,4-Dichlorophenol	330	ug/kg	157	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2,6-Dichlorophenol	330	ug/kg	165	ug/kg	19980218										
Diethyl phthalate	330	ug/kg	41	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Dimethoate	660	ug/kg	330	ug/kg	19980218										
p-Dimethylaminoazobenzene	660	ug/kg	330	ug/kg	19980218										
7,12-Dimethylbenz(a)anthracene	660	ug/kg	330	ug/kg	19980218										
3,3'-Dimethylbenzidine	1600	ug/kg	800	ug/kg	19980218										
2,4-Dimethylphenol	330	ug/kg	86	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Dimethyl phthalate	330	ug/kg	25	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
1,3-Dinitrobenzene	330	ug/kg	165	ug/kg	19980218										
4,6-Dinitro-2-methylphenol	1600	ug/kg	35	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2,4-Dinitrophenol	1600	ug/kg	250	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2,4-Dinitrotoluene	330	ug/kg	49	ug/kg	19980218	3330	ug/kg	47	114	17	3330	ug/kg	47	114	17
2,6-Dinitrotoluene	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Dinoseb	660	ug/kg	330	ug/kg	19980218										
Di-n-octyl phthalate	330	ug/kg	41	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Disulfoton	1600	ug/kg	800	ug/kg	19980218										
Ethyl methanesulfonate	330	ug/kg	165	ug/kg	19980218										
Famphur	3300	ug/kg	1650	ug/kg	19980218										
Fluoranthene	330	ug/kg	51	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Fluorene	330	ug/kg	57	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Hexachlorobenzene	330	ug/kg	43	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Hexachlorobutadiene	330	ug/kg	40	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Hexachlorocyclopentadiene	1600	ug/kg	718	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Hexachloroethane	330	ug/kg	167	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Hexachloropropene	3300	ug/kg	1650	ug/kg	19980218										
Indeno(1,2,3-cd)pyrene	330	ug/kg	18	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Isodrin	330	ug/kg	165	ug/kg	19980218										
Isophorone	330	ug/kg	33	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Isosafrole	660	ug/kg	165	ug/kg	19980218										
Kepone	3300	ug/kg	1650	ug/kg	19980218										
Methapyrilene	1600	ug/kg	800	ug/kg	19980218										
3-Methylcholanthrene	660	ug/kg	330	ug/kg	19980218										
Methyl methanesulfonate	330	ug/kg	165	ug/kg	19980218										
2-Methylnaphthalene	330	ug/kg	30	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: SOLID
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Methyl parathion	1600	ug/kg	800	ug/kg	19980218										
2-Methylphenol	330	ug/kg	42	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
3-Methylphenol	330	ug/kg	165	ug/kg	19980218										
4-Methylphenol	330	ug/kg	64	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Naphthalene	330	ug/kg	40	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
1,4-Naphthoquinone	1600	ug/kg	800	ug/kg	19980218										
1-Naphthylamine	330	ug/kg	165	ug/kg	19980218										
2-Naphthylamine	330	ug/kg	165	ug/kg	19980218										
2-Nitroaniline	1600	ug/kg	285	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
3-Nitroaniline	1600	ug/kg	197	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
4-Nitroaniline	1600	ug/kg	504	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Nitrobenzene	330	ug/kg	35	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2-Nitrophenol	330	ug/kg	55	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
4-Nitrophenol	1600	ug/kg	720	ug/kg	19980218	3330	ug/kg	16	119	16	3330	ug/kg	16	119	16
4-Nitroquinoline-1-oxide	3300	ug/kg	1670	ug/kg	19980429										
N-Nitrosodi-n-butylamine	330	ug/kg	165	ug/kg	19980218										
N-Nitrosodiethylamine	330	ug/kg	165	ug/kg	19980218										
N-Nitrosodimethylamine	330	ug/kg	165	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
N-Nitrosodiphenylamine	330	ug/kg	165	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
N-Nitrosodi-n-propylamine	330	ug/kg	24	ug/kg	19980218	3330	ug/kg	22	132	13	3330	ug/kg	22	132	13
N-Nitrosomethylethylamine	330	ug/kg	165	ug/kg	19980218										
N-Nitrosomorpholine	330	ug/kg	165	ug/kg	19980218										
N-Nitrosopiperidine	330	ug/kg	165	ug/kg	19980218										
N-Nitrosopyrrolidine	330	ug/kg	165	ug/kg	19980218										
5-Nitro-o-toluidine	660	ug/kg	330	ug/kg	19980218										
2,2'-oxybis(1-Chloropropane)	330	ug/kg	28	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Parathion	1600	ug/kg	800	ug/kg	19980218										
Pentachlorobenzene	330	ug/kg	165	ug/kg	19980218										
Pentachloroethane	1600	ug/kg	800	ug/kg	19980218										
Pentachloronitrobenzene	1600	ug/kg	800	ug/kg	19980218										
Pentachlorophenol	1600	ug/kg	250	ug/kg	19980218	3330	ug/kg	22	114	23	3330	ug/kg	22	114	23
Phenacetin	660	ug/kg	330	ug/kg	19980218										
Phenanthrene	330	ug/kg	52	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
Phenol	330	ug/kg	59	ug/kg	19980218	3330	ug/kg	39	105	16	3330	ug/kg	39	105	16
1,4-Phenylenediamine	3300	ug/kg	1650	ug/kg	19980218										
Phorate	1600	ug/kg	800	ug/kg	19980218										
2-Picoline	660	ug/kg	330	ug/kg	19980218										
Pronamide	660	ug/kg	330	ug/kg	19980218										
Pyrene	330	ug/kg	58	ug/kg	19980218	3330	ug/kg	46	124	11	3330	ug/kg	46	124	11

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: SOLID
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809	Detection Limits					Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Pyridine	660	ug/kg	330	ug/kg	19980218										
Safrole	660	ug/kg	330	ug/kg	19980218										
Sulfotepp	1600	ug/kg	800	ug/kg	19980218										
1,2,4,5-Tetrachlorobenzene	330	ug/kg	165	ug/kg	19980218										
2,3,4,6-Tetrachlorophenol	1600	ug/kg	800	ug/kg	19980218										
Thionazin	1600	ug/kg	800	ug/kg	19980218										
o-Toluidine	660	ug/kg	330	ug/kg	19980218										
1,2,4-Trichlorobenzene	330	ug/kg	23	ug/kg	19980218	3330	ug/kg	41	120	14	3330	ug/kg	41	120	14
2,4,5-Trichlorophenol	330	ug/kg	112	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
2,4,6-Trichlorophenol	330	ug/kg	85	ug/kg	19980218	3330	ug/kg	50	150	50	3330	ug/kg	50	150	50
O,O,O-Triethyl phosphorothioate	1600	ug/kg	800	ug/kg	19980218										
1,3,5-Trinitrobenzene	1600	ug/kg	800	ug/kg	19980218										
2-Fluorobiphenyl						1660	ug/kg	46	124	0	1660	ug/kg	46	124	0
2-Fluorophenol						2500	ug/kg	45	115	0	2500	ug/kg	45	115	0
2,4,6-Tribromophenol						2500	ug/kg	41	122	0	2500	ug/kg	41	122	0
Nitrobenzene-d5						1660	ug/kg	40	118	0	1660	ug/kg	40	118	0
Phenol-d5						2500	ug/kg	44	117	0	2500	ug/kg	44	117	0
Terphenyl-d14						1660	ug/kg	44	120	0	1660	ug/kg	44	120	0
2-Chlorophenol-d4						2500	ug/kg	20	130	0	2500	ug/kg	20	130	0
1,2-Dichlorobenzene-d4						1660	ug/kg	20	130	0	1660	ug/kg	20	130	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: WATER
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
a,a-Dimethylphenethylamine	50	ug/L	25	ug/L	19980914										
Acenaphthene	10	ug/L	1.0	ug/L	19980914	100	ug/L	42	118	42	100	ug/L	42	118	42
Acenaphthylene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Acetophenone	10	ug/L	5	ug/L	19980914										
2-Acetylaminofluorene	100	ug/L	50	ug/L	19980914										
4-Aminobiphenyl	50	ug/L	25	ug/L	19980914										
Aniline	10	ug/L	5	ug/L	19980914										
Anthracene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Aramite	20	ug/L	10	ug/L	19980914										
Azobenzene	10	ug/L	5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzidine	100	ug/L	50	ug/L	19980914										
Benzo(a)anthracene	10	ug/L	0.88	ug/L	19980914										
Benzo(b)fluoranthene	10	ug/L	0.87	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzo(k)fluoranthene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzoic acid	50	ug/L	10	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzo(ghi)perylene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzo(a)pyrene	10	ug/L	0.83	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Benzyl alcohol	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
bis(2-Chloroethoxy)methane	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
bis(2-Chloroethyl) ether	10	ug/L	1.2	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
bis(2-Ethylhexyl) phthalate	10	ug/L	0.71	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
4-Bromophenyl phenyl ether	10	ug/L	0.90	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Butyl benzyl phthalate	10	ug/L	0.79	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Carbazole	10	ug/L	5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
4-Chloroaniline	10	ug/L	0.73	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Chlorobenzilate	10	ug/L	5	ug/L	19980914										
4-Chloro-3-methylphenol	10	ug/L	1.9	ug/L	19980914	100	ug/L	40	100	25	100	ug/L	40	100	25
2-Chloronaphthalene	10	ug/L	0.97	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2-Chlorophenol	10	ug/L	2.0	ug/L	19980914	100	ug/L	36	100	31	100	ug/L	36	100	31
4-Chlorophenyl phenyl ether	10	ug/L	0.86	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Chrysene	10	ug/L	0.95	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Diallate	20	ug/L	10	ug/L	19980914										
Dibenz(a,j)acridine	20	ug/L	10	ug/L	19980914										
Dibenz(a,h)anthracene	10	ug/L	0.95	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Dibenzofuran	10	ug/L	1.2	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Di-n-butyl phthalate	10	ug/L	0.97	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: WATER
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
1,2-Dichlorobenzene	10	ug/L	0.77	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
1,3-Dichlorobenzene	10	ug/L	0.76	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
1,4-Dichlorobenzene	10	ug/L	0.75	ug/L	19980914	100	ug/L	10	121	30	100	ug/L	10	121	30
3,3'-Dichlorobenzidine	50	ug/L	1.3	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2,4-Dichlorophenol	10	ug/L	2.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2,6-Dichlorophenol	10	ug/L	5	ug/L	19980914										
Diethyl phthalate	10	ug/L	1.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Dimethoate	20	ug/L	10	ug/L	19980914										
p-Dimethylaminoazobenzene	20	ug/L	10	ug/L	19980914										
7,12-Dimethylbenz(a)anthracene	20	ug/L	10	ug/L	19980914										
3,3'-Dimethylbenzidine	50	ug/L	25	ug/L	19980914										
2,4-Dimethylphenol	10	ug/L	2.5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Dimethyl phthalate	10	ug/L	0.96	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
1,3-Dinitrobenzene	10	ug/L	5	ug/L	19980914										
4,6-Dinitro-2-methylphenol	50	ug/L	25	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2,4-Dinitrophenol	50	ug/L	25	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2,4-Dinitrotoluene	10	ug/L	5.0	ug/L	19980914	100	ug/L	41	113	20	100	ug/L	41	113	20
2,6-Dinitrotoluene	10	ug/L	0.76	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Dinoseb	20	ug/L	10	ug/L	19980914										
Di-n-octyl phthalate	10	ug/L	0.84	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Disulfoton	50	ug/L	25	ug/L	19980914										
Ethyl methanesulfonate	10	ug/L	5	ug/L	19980914										
Famphur	100	ug/L	50	ug/L	19980914										
Fluoranthene	10	ug/L	0.90	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Fluorene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Hexachlorobenzene	10	ug/L	1.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Hexachlorobutadiene	10	ug/L	5.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Hexachlorocyclopentadiene	50	ug/L	5	ug/L	19990526	100	ug/L	50	150	50	100	ug/L	50	150	50
Hexachloroethane	10	ug/L	5.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Hexachloropropene	10	ug/L	0.85	ug/L	19980914										
Indeno(1,2,3-cd)pyrene	10	ug/L	0.85	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Isodrin	10	ug/L	5	ug/L	19980914										
Isophorone	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Isosafrole	20	ug/L	10	ug/L	19980914										
Kepone	100	ug/L	50	ug/L	19980914										
Methapyrilene	50	ug/L	25	ug/L	19980914										
3-Methylcholanthrene	20	ug/L	10	ug/L	19980914										
Methyl methanesulfonate	10	ug/L	5	ug/L	19980914										
2-Methylnaphthalene	10	ug/L	1.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: WATER
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809	Detection Limits					Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Methyl parathion	50	ug/L	25	ug/L	19980914										
2-Methylphenol	10	ug/L	1.8	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
3-Methylphenol	10	ug/L	5	ug/L	19980914										
4-Methylphenol	10	ug/L	1.5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Naphthalene	10	ug/L	1.2	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
1,4-Naphthoquinone	50	ug/L	25	ug/L	19980914										
1-Naphthylamine	10	ug/L	5	ug/L	19980914										
2-Naphthylamine	10	ug/L	5	ug/L	19980914										
2-Nitroaniline	50	ug/L	0.68	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
3-Nitroaniline	50	ug/L	5.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
4-Nitroaniline	50	ug/L	0.81	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Nitrobenzene	10	ug/L	1.1	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2-Nitrophenol	10	ug/L	2.0	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
4-Nitrophenol	50	ug/L	10	ug/L	19980914	100	ug/L	10	54	35	100	ug/L	10	54	35
4-Nitroquinoline-1-oxide	100	ug/L	50	ug/L	19980914										
N-Nitrosodi-n-butylamine	10	ug/L	5	ug/L	19980914										
N-Nitrosodiethylamine	10	ug/L	5	ug/L	19980914										
N-Nitrosodimethylamine	10	ug/L	5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
N-Nitrosodiphenylamine	10	ug/L	5	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
N-Nitrosodi-n-propylamine	10	ug/L	0.87	ug/L	19980914	100	ug/L	33	120	30	100	ug/L	33	120	30
N-Nitrosomethylethylamine	10	ug/L	5	ug/L	19980914										
N-Nitrosomorpholine	10	ug/L	5	ug/L	19980914										
N-Nitrosopiperidine	10	ug/L	5	ug/L	19980914										
N-Nitrosopyrrolidine	10	ug/L	5	ug/L	19980914										
5-Nitro-o-toluidine	20	ug/L	10	ug/L	19980914										
2,2'-oxybis(1-Chloropropane)	10	ug/L	0.87	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Parathion	50	ug/L	25	ug/L	19980914										
Pentachlorobenzene	10	ug/L	5	ug/L	19980914										
Pentachloroethane	50	ug/L	25	ug/L	19980914										
Pentachloronitrobenzene	50	ug/L	25	ug/L	19980914										
Pentachlorophenol	50	ug/L	18	ug/L	19980914	100	ug/L	16	124	29	100	ug/L	16	124	29
Phenacetin	20	ug/L	10	ug/L	19980914										
Phenanthrene	10	ug/L	0.96	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
Phenol	10	ug/L	5.0	ug/L	19980914	100	ug/L	10	51	35	100	ug/L	10	51	35
1,4-Phenylenediamine	100	ug/L	50	ug/L	19980914										
Phorate	50	ug/L	25	ug/L	19980914										
2-Picoline	20	ug/L	10	ug/L	19980914										
Pronamide	20	ug/L	10	ug/L	19980914										
Pyrene	10	ug/L	1.0	ug/L	19980914	100	ug/L	42	140	21	100	ug/L	42	140	21

Target Analyte List: SAC: 8270C STD + AP9 LIST

Matrix: WATER
Extraction: None specified.
Method: Base/Neutrals and Acids (8270C)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20809		Detection Limits				Check List 20800					Spike List 20801				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Pyridine	20	ug/L	10	ug/L	19980914										
Safrole	20	ug/L	10	ug/L	19980914										
Sulfotepp	50	ug/L	25	ug/L	19980914										
1,2,4,5-Tetrachlorobenzene	10	ug/L	5	ug/L	19980914										
2,3,4,6-Tetrachlorophenol	50	ug/L	25	ug/L	19980914										
Thionazin	50	ug/L	25	ug/L	19980914										
o-Toluidine	20	ug/L	10	ug/L	19980914										
1,2,4-Trichlorobenzene	10	ug/L	0.79	ug/L	19980914	100	ug/L	10	126	29	100	ug/L	10	126	29
2,4,5-Trichlorophenol	10	ug/L	1.7	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
2,4,6-Trichlorophenol	10	ug/L	1.8	ug/L	19980914	100	ug/L	50	150	50	100	ug/L	50	150	50
O,O,O-Triethyl phosphorothioate	50	ug/L	25	ug/L	19980914										
1,3,5-Trinitrobenzene	50	ug/L	25	ug/L	19980914										
2-Fluorobiphenyl						50	ug/L	33	111	0	50	ug/L	33	111	0
2-Fluorophenol						75	ug/L	10	74	0	75	ug/L	10	74	0
2,4,6-Tribromophenol						75	ug/L	18	140	0	75	ug/L	18	140	0
Nitrobenzene-d5						50	ug/L	34	103	0	50	ug/L	34	103	0
Phenol-d5						75	ug/L	10	54	0	75	ug/L	10	54	0
Terphenyl-d14						50	ug/L	30	134	0	50	ug/L	30	134	0
2-Chlorophenol-d4						75	ug/L	20	130	0	75	ug/L	20	130	0
1,2-Dichlorobenzene-d4						50	ug/L	20	130	0	50	ug/L	20	130	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8081A Std List

Matrix: WATER
Extraction: None specified.
Method: Pesticides (8081A)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20620		Detection Limits				Check List 20602					Spike List 20603				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Aldrin	0.05	ug/L	0.006	ug/L	19980527	0.50	ug/L	49	121	35	0.50	ug/L	49	121	35
alpha-BHC	0.05	ug/L	0.008	ug/L	19980527										
beta-BHC	0.05	ug/L	0.004	ug/L	19980527										
delta-BHC	0.05	ug/L	0.006	ug/L	19980527										
gamma-BHC (Lindane)	0.05	ug/L	0.01	ug/L	19980527	0.50	ug/L	39	116	35	0.50	ug/L	39	116	35
alpha-Chlordane	0.05	ug/L	0.007	ug/L	19980527										
gamma-Chlordane	0.05	ug/L	0.008	ug/L	19980527										
4,4'-DDD	0.10	ug/L	0.005	ug/L	19980527										
4,4'-DDE	0.10	ug/L	0.015	ug/L	19980527										
4,4'-DDT	0.10	ug/L	0.02	ug/L	19980527	1.0	ug/L	46	130	35	1.0	ug/L	46	130	35
Dieldrin	0.10	ug/L	0.02	ug/L	19980527	1.0	ug/L	49	146	35	1.0	ug/L	49	146	35
Endosulfan I	0.05	ug/L	0.010	ug/L	19980527										
Endosulfan II	0.10	ug/L	0.02	ug/L	19980527										
Endosulfan sulfate	0.10	ug/L	0.033	ug/L	19980527										
Endrin	0.10	ug/L	0.02	ug/L	19980527	1.0	ug/L	50	146	35	1.0	ug/L	50	146	35
Endrin aldehyde	0.10	ug/L	0.029	ug/L	19980527										
Endrin ketone	0.10	ug/L	0.024	ug/L	19980527										
Heptachlor	0.05	ug/L	0.007	ug/L	19980527	0.50	ug/L	47	126	35	0.50	ug/L	47	126	35
Heptachlor epoxide	0.05	ug/L	0.008	ug/L	19980527										
Methoxychlor	2.0	ug/L	0.04	ug/L	19980527										
Toxaphene	2.0	ug/L	1.4	ug/L	19980527										
Decachlorobiphenyl						0.20	ug/L	10	146	0	0.20	ug/L	10	146	0
Tetrachloro-m-xylene						0.20	ug/L	47	119	0	0.20	ug/L	47	119	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8081A Std List

Matrix: SOLID
Extraction: None specified.
Method: Pesticides (8081A)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20620		Detection Limits				Check List 20602					Spike List 20603				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Aldrin	1.7	ug/kg	0.36	ug/kg	19980527	16.7	ug/kg	70	112	35	16.7	ug/kg	70	112	35
alpha-BHC	1.7	ug/kg	0.39	ug/kg	19980527										
beta-BHC	1.7	ug/kg	0.38	ug/kg	19980527										
delta-BHC	1.7	ug/kg	0.44	ug/kg	19980527										
gamma-BHC (Lindane)	1.7	ug/kg	0.35	ug/kg	19980527	16.7	ug/kg	49	115	35	16.7	ug/kg	49	115	35
alpha-Chlordane	1.7	ug/kg	0.31	ug/kg	19980527										
gamma-Chlordane	1.7	ug/kg	0.32	ug/kg	19980527										
4,4'-DDD	3.4	ug/kg	0.71	ug/kg	19980527										
4,4'-DDE	3.4	ug/kg	0.63	ug/kg	19980527										
4,4'-DDT	3.4	ug/kg	1.4	ug/kg	19980527	33.3	ug/kg	62	143	35	33.3	ug/kg	62	143	35
Dieldrin	3.4	ug/kg	0.51	ug/kg	19980527	33.3	ug/kg	74	133	35	33.3	ug/kg	74	133	35
Endosulfan I	1.7	ug/kg	0.38	ug/kg	19980527										
Endosulfan II	3.4	ug/kg	0.72	ug/kg	19980527										
Endosulfan sulfate	3.4	ug/kg	0.82	ug/kg	19980527										
Endrin	3.4	ug/kg	0.49	ug/kg	19980527	33.3	ug/kg	76	144	35	33.3	ug/kg	76	144	35
Endrin aldehyde	3.4	ug/kg	1.16	ug/kg	19980527										
Endrin ketone	3.4	ug/kg	0.79	ug/kg	19980527										
Heptachlor	1.7	ug/kg	0.38	ug/kg	19980527	16.7	ug/kg	62	132	35	16.7	ug/kg	62	132	35
Heptachlor epoxide	1.7	ug/kg	0.25	ug/kg	19980527										
Methoxychlor	17	ug/kg	2.6	ug/kg	19980527										
Toxaphene	67	ug/kg	56	ug/kg	19980527										
Decachlorobiphenyl						13.3	ug/kg	73	135	0	13.3	ug/kg	73	135	0
Tetrachloro-m-xylene						13.3	ug/kg	55	117	0	13.3	ug/kg	55	117	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8082 PCB Aroclors Alternate List

Matrix: SOLID
Extraction: None specified.
Method: PCBs (8082)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20603		Detection Limits				Check List 20606					Spike List 20607				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Aroclor 1016	33	ug/kg	1.9	ug/kg	19980514	66.7	ug/kg	63	118	35	66.7	ug/kg	63	118	35
Aroclor 1221	33	ug/kg	1.9	ug/kg	19980514										
Aroclor 1232	33	ug/kg	1.9	ug/kg	19980514										
Aroclor 1242	33	ug/kg	1.9	ug/kg	19980514										
Aroclor 1248	33	ug/kg	1.9	ug/kg	19980514										
Aroclor 1254	33	ug/kg	1.9	ug/kg	19980514										
Aroclor 1260	33	ug/kg	1.7	ug/kg	19980514	66.7	ug/kg	66	133	35	66.7	ug/kg	66	133	35
Decachlorobiphenyl						13.3	ug/kg	63	113	0	13.3	ug/kg	63	113	0
Tetrachloro-m-xylene						13.3	ug/kg	51	126	0	13.3	ug/kg	51	126	0

Quanterra Reference Data Summary

Target Analyte List: SAC: 8082 PCB Aroclors Alternate List

Matrix: WATER
Extraction: None specified.
Method: PCBs (8082)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Target List 20603		Detection Limits				Check List 20606					Spike List 20607				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
Aroclor 1016	1.0	ug/L	0.21	ug/L	19980514	2.0	ug/L	70	130	20	2.0	ug/L	70	130	20
Aroclor 1221	1.0	ug/L	0.37	ug/L	19980514										
Aroclor 1232	1.0	ug/L	0.37	ug/L	19980514										
Aroclor 1242	1.0	ug/L	0.37	ug/L	19980514										
Aroclor 1248	1.0	ug/L	0.37	ug/L	19980514										
Aroclor 1254	1.0	ug/L	0.37	ug/L	19980514										
Aroclor 1260	1.0	ug/L	0.37	ug/L	19980514	2.0	ug/L	70	130	20	2.0	ug/L	70	130	20
Decachlorobiphenyl						0.2	ug/L	70	130	0	0.2	ug/L	70	130	0
Tetrachloro-m-xylene						0.2	ug/L	70	130	0	0.2	ug/L	70	130	0

Quanterra Reference Data Summary

Target Analyte List: All Analytes

Matrix: WATER
Extraction: None specified.
Method: Herbicides (8151A)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List			Detection Limits			Check List 20618					Spike List 20619				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
2,4-D	4.0	ug/L	0.515	ug/L	19980831	16	ug/L	54	104	50	16	ug/L	54	104	50
Dalapon	2.0	ug/L	0.196	ug/L	19980831	8	ug/L	50	150	50	8	ug/L	50	150	50
2,4-DB	4.0	ug/L	0.488	ug/L	19980831	16	ug/L	50	150	50	16	ug/L	50	150	50
Dicamba	2.0	ug/L	0.268	ug/L	19980831										
Dichlorprop	4.0	ug/L	0.512	ug/L	19980831										
Dinoseb	0.60	ug/L	0.431	ug/L	19980831										
MCPA	400	ug/L	200	ug/L	19981201										
MCPP	400	ug/L	200	ug/L	19981201										
Pentachlorophenol	0.50	ug/L	0.25	ug/L	19981201										
2,4,5-TP (Silvex)	1.0	ug/L	0.136	ug/L	19980831	4	ug/L	58	106	50	4	ug/L	58	106	50
2,4,5-T	1.0	ug/L	0.134	ug/L	19980831	4	ug/L	58	106	50	4	ug/L	58	106	50
2,3,4,6-Tetrachlorophenol	0.5	ug/L	0.134	ug/L	19980831										
DCAA						16	ug/L	52	92	0	16	ug/L	52	92	50

Quanterra Refere :e Data Summary

Target Analyte List: All Analytes

Matrix: SOLID
Extraction: None specified.
Method: Herbicides (8151A)
QC Program: STANDARD TEST SET
Location: Quanterra - Sacramento

Analyte List		Detection Limits				Check List 20618					Spike List 20619				
Compound	RL	Units	MDL	Units	Run Date	Amt	Units	LCL	UCL	RPD	Amt	Units	LCL	UCL	RPD
2,4-D	80	ug/kg	40	ug/kg	19980831	800	ug/kg	36	134	50	800	ug/kg	36	134	50
Dalapon	40	ug/kg	20	ug/kg	19980831	400	ug/kg	50	150	50	400	ug/kg	50	150	50
2,4-DB	80	ug/kg	40	ug/kg	19980831	800	ug/kg	50	150	50	800	ug/kg	50	150	50
Dicamba	40	ug/kg	20	ug/kg	19980831										
Dichlorprop	80	ug/kg	40	ug/kg	19980831										
Dinoseb	12	ug/kg	6.0	ug/kg	19980831										
MCPA	8000	ug/kg	4000	ug/kg	19980430										
MCPP	8000	ug/kg	4000	ug/kg	19980430										
Pentachlorophenol	0.5	ug/kg	0.25	ug/kg	19980430										
2,4,5-TP (Silvex)	20	ug/kg	10	ug/kg	19980430	200	ug/kg	56	114	50	200	ug/kg	56	114	50
2,4,5-T	20	ug/kg	10	ug/kg	19980831	200	ug/kg	56	114	50	200	ug/kg	56	114	50
2,3,4,6-Tetrachlorophenol	0.50	ug/kg	0.25	ug/kg	19980831										
DCAA						800	ug/kg	25	159	0	800	ug/kg	25	159	50