QUALIFIED DATA CONTINUED

Qualifiers

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified. Rejected results are not usable for any purpose.

DataVal Reason Codes

001 Exceeded holding time.
002 Blank contamination.
003 Associated initial calibration showed elevated %RSD for compound.
004 Correlation coefficient < 0.995.
005 Average relative response factor < 0.05.
006 Associated continuing calibration showed elevated %D for compound.
007 Relative response factor < 0.05.
008 Surrogate recovery was outside limits.
009 Laboratory control sample recovery exceeded acceptance criteria.
010 Matrix spike recovery exceeded acceptance criteria.
011 The area of the internal standard exceeded acceptance criteria.
012 Retention time exceeded criteria for this compound.
013 Mass spectrum did not match the reference spectrum.
014 Tentatively identified compound (TIC).
015 Value exceeded the linear range of the instrument and was not re-analyzed.
016 Compounds/components co-elute.
017 Results reported below the quantitation limit.
018 Laboratory duplicate relative percent differences (RPD) outside acceptance criteria.
019 Field duplicate RPD outside acceptance criteria.
020 Percent difference between columns exceeded 25%.
021 Laboratory control sample RPD outside acceptance criteria.
022 Matrix spike sample RPD outside acceptance criteria.
023 Serial dilution percent difference outside acceptance criteria.
024 Retention time exceeded established window.
025 ICP Interference Check Sample had percent recoveries outside the 80%-120% criteria.
026 CRI/CRA (detection limit standard) failed acceptance criteria.
100 Other.

Data Validation Worksheet
General Chemistry

Project Name: Alhambra
Project Number: R04S07
Laboratory Name: USEPA Region 9 Laboratory, Richmond, CA

Performed by/Date: EJN 1/5/06

Reviewed by/Date: APJ 2/17/06

Qualified Data? NO____ YES__X__, see page(s)__25__

Analysis	Method Number
Nitrate as N	300.1
Perchlorate	314.0

SDG Number	Date Sampled	#Samples/Matrix	Validation Level
03309A	04-Nov-03 thru 07-Nov-03	11 Waters	IV

Data review was performed using the following documents as guidelines (check all that are applicable):

[X] USEPA CLP National Functional Guidelines for Inorganic Data Review (NFG Ing.), October 2004
[ ] Project guidance document(s):
[X] Analysis method(s) **EPA SOPs 530R4, 531R3**

[ ] **Validated using QuikVal** (See attached QuikVal sheets for Holding Time, LCS and MS/MSD evaluation)

ITEMS CHECKED - LEVEL III (Where Applicable)
Sample Receiving
Electronic Data Deliverables
Case Narrative
Holding Times
Instrument Run Logs
Initial Instrument Calibration
Continuing Instrument Calibration
Method Blanks
Laboratory Control Samples

ITEMS CHECKED - LEVEL III continued (Where Applicable)
Matrix Spikes/Matrix Spike Duplicates
Laboratory Duplicates
Field Duplicates
Field QC Blanks
Reporting Limits

ITEMS CHECKED - LEVEL IV (Where Applicable)
Sample Receiving
Electronic Data Deliverables
Case Narrative
Holding Times
Instrument Run Logs
Initial Instrument Calibration
Continuing Instrument Calibration
Method Blanks
Laboratory Control Samples

ITEMS CHECKED - LEVEL IV continued (Where Applicable)
Matrix Spikes/Matrix Spike Duplicates
Laboratory Duplicates
Field Duplicates
Field QC Blanks
Reporting Limits
Raw Data
Re-calculation of reported results
Method Detection Limits

SAMPLE RECEIVING

	YES	NO	N/A
All COC forms relinquished and received with signature/date?	X		
Reported sample IDs match those listed on COC?	X		
Reported analyses/methods match those listed on COC?	X		
Lab report includes results for every sample/analysis as listed on COC?	X		
Cooler Receipt form present?	X		
Cooler Receipt form filled in completely and signed?	X		
Temperature recorded from:	Not noted		
Recorded temperature between 2C and 6C?	X		

List of Anomalies/Recommended Actions

X **No action required**

ELECTRONIC DATA DELIVERABLES

	YES	NO	N/A
Are EDDs included with the data package?	X		
Does client require EDD check against hardcopy?		X	
Were all EDDs verified against hardcopy results?			X
Did all EDD results match reported results?			X
Were anomalies noted?			X
Was the project office/lab notified?			X

List of Anomalies/Recommended Actions

☐ **No action required**

CLIENT NOTIFICATION

Add Memo Items of Missing Info./Corrections Below	Response Received? YES	NO
X **There were no memo items for this project.**		

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CASE NARRATIVES/LABORATORY REPORT FOOTNOTES

	YES	NO	N/A
Case Narrative present in data package?		X	
Are anomalies noted in the CN? (if yes, place an 'X' below)			X
Are anomalies noted in report footnotes? (if yes, place an 'X' below)	X		

THE FOLLOWING ANOMALIES WERE NOTED IN CASE NARRATIVES/LABORATORY REPORT FOOTNOTES:

Sample Delivery Group (SDG) Number:	**03309A**					
Missed analysis holding time	X					
Method blank contamination						
Instrument blank contamination						
LCS and/or LCS RPD failure						
MS/MSD and/or MS/MSD RPD failure						
Laboratory duplicate failure						
Analyte identification anomaly						
Correlation coefficient fails criteria in the ICAL						
Other ICAL anomalies						
% Recovery fails criteria in the CCV						
Other CCV anomalies						
Value exceeding the linear range of the instrument						
Result reported below the quantition limit						
Other notations (list below)						

List of Anomalies

X **No anomalies were noted in the case narrative(s)/laboratory report footnotes included with this project.**

HOLDING TIMES - DAYS

Enter Date as mo/day/year
DBE and DBA calculated automatically
Use following worksheet for analyses that have holding time requirements listed in hours.

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received	Preservation & Temp	Analysis Date	DBA	Comments
AH03201 (FD1)	0311002-01	Water	4-Nov-03	5-Nov-03	3C	12-Nov-03	7	Perchlorate
AH03202 (FD1)	0311002-02	Water	4-Nov-03	5-Nov-03	3C	12-Nov-03	7	Perchlorate
AH03203 (FB)	0311002-03	Water	4-Nov-03	5-Nov-03	3C	12-Nov-03	7	Perchlorate
AH03204	0311007-01	Water	5-Nov-03	6-Nov-03	4C/5C	12-Nov-03	7	Perchlorate
AH03205 (FB)	0311007-02	Water	5-Nov-03	6-Nov-03	4C/5C	12-Nov-03	7	Perchlorate
AH03206	0311007-03	Water	5-Nov-03	6-Nov-03	4C/5C	14-Nov-03	8	Perchlorate
AH03207	0311010-01	Water	6-Nov-03	7-Nov-03	5C	12-Nov-03	6	Perchlorate
AH03208	0311010-02	Water	6-Nov-03	7-Nov-03	5C	12-Nov-03	5	Perchlorate
AH03209 (EB)	0311010-03	Water	6-Nov-03	7-Nov-03	5C	12-Nov-03	5	Perchlorate
AH03211	0311010-04	Water	6-Nov-03	7-Nov-03	5C	12-Nov-03	5	Perchlorate
AH03210	0311016-01	Water	7-Nov-03	10-Nov-03	4C	14-Nov-03	7	Perchlorate

DBE = Days before extraction (extraction date - collection date)
DBA = Days before analysis (analysis date - collection date)

Recommended Actions

[X] **No action required**

PRESERVATIVE & HOLDING TIME REQUIREMENTS BY METHOD - WATERS:

ANALYTE	METHOD	PRESERVATIVE	HOLDING TIME
PERCHLORATE	314.0	NONE	28 DAYS

HOLDING TIMES - HOURS

Enter Date as mo/day/year
DBE and DBA calculated automatically

SAMPLE MATRIX: WATER

Sample ID	Laboratory ID	Date Collected	Time * Collected	Date Received	Preservation & Temp	Analysis Date	Analysis Time *	DBA	HBA	Comments
AH03201 (FD1)	0311002-01	4-Nov-03	13:00	5-Nov-03	3C	5-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03202 (FD1)	0311002-02	4-Nov-03	13:30	5-Nov-03	3C	5-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03203 (FB)	0311002-03	4-Nov-03	14:00	5-Nov-03	3C	5-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03204	0311007-01	5-Nov-03	10:30	6-Nov-03	4C/5C	6-Nov-03	NA	1	< 48 HRs	Nitrate-N
AH03205 (FB)	0311007-02	5-Nov-03	11:00	6-Nov-03	4C/5C	6-Nov-03	NA	1	< 48 HRs	Nitrate-N
AH03206	0311007-03	5-Nov-03	14:30	6-Nov-03	4C/5C	6-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03207	0311010-01	6-Nov-03	11:00	7-Nov-03	5C	7-Nov-03	NA	1	< 48 HRs	Nitrate-N
AH03208	0311010-02	6-Nov-03	13:00	7-Nov-03	5C	7-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03209 (EB)	0311010-03	6-Nov-03	14:00	7-Nov-03	5C	7-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03211	0311010-04	6-Nov-03	15:15	7-Nov-03	5C	7-Nov-03	NA	0	< 48 HRs	Nitrate-N
AH03210	0311016-01	7-Nov-03	11:00	10-Nov-03	4C	11-Nov-03	NA	**4**	**> 48 HRs**	Nitrate-N

* Enter time values in military style with colon.
DBA = Days before analysis (analysis date - collection date); HBA = Hours before analysis (analysis time - collection time)

IF DBA < HOLDING TIME REQUIREMENT, SAMPLE PASSES.
IF DBA > HOLDING TIME REQUIREMENT, QUALIFY DATA AS APPROPRIATE.
IF DBA = HOLDING TIME REQUIREMENT, USE HBA TO EVALUATE HOURLY HOLDING TIMES.

Recommended Actions

☐ **No action required**

QUALIFY NO3-N J 001 FOR SAMPLE 0311016-01.

PRESERVATIVE & HOLDING TIME REQUIREMENTS BY METHOD - WATERS:

ANALYTE	METHOD	PRESERVATIVE*	HOLDING TIME
NITRATE	300.1, 352.1	4°C +/- 2°C	48 HOURS

METHOD BLANK ANALYSES

	YES	NO	N/A
Preparation Blank for each matrix?	X		
ICB analyzed after ICV?		X(4,5)	
CCB analyzed after each CCV?		X(5)	
Form Present?	X		
Did laboratory take appropriate corrective action for blank contamination greater than project acceptance criteria?			X

ACCEPTANCE CRITERIA REFERENCE: Per Client

ACCEPTANCE LEVEL FOR CONTAMINATION: < RL

LIST CONTAMINANTS DETECTED IN METHOD BLANKS
LIST CONTAMINANTS DETECTED IN CALIBRATION BLANKS (LEVEL IV ONLY)

Blank ID	Matrix	Analyte	Concen-tration	Units	10X	Comments
					0	None
					0	
					0	
					0	
					0	
					0	

LIST ALL METHOD BLANKS AND THEIR ASSOCIATED SAMPLES

Blank ID	Analyte/ Method	Associated Samples
B3K0005-BLK1/BLK2	300.1	AH03201, AH03202 and AH03203
B3K0010-BLK1/BLK2	300.1	AH03204, AH03205 and AH03206
B3K0012-BLK1/BLK2	300.1	AH03207, AH03208, AH03209 and AH03211
B3K0020-BLK1/BLK2	300.1	AH03210
B3K0021-BLK1/BLK2	314.0	AH03201, AH03202, AH03203, AH03204, AH03205, AH03207, AH03208, AH03209 and AH03211
B3K0029-BLK1/BLK2	314.0	AH03206 and AH03210

List of Anomalies/Recommended Actions

X **No action required**

(1) Sample results greater than 10X blank amount.
(2) Sample results non-detect.
(3) No associated samples.
(4) ICB analyzed prior to ICV for NO3-N.
(5) Calibration blanks were not analyzed for perchlorate analysis.

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FIELD QC BLANK ANALYSES

FIELD BLANK ANALYSES

	YES	NO	N/A
Field Blank analyzed?	X		
Form Present?	X		

EQUIPMENT BLANK ANALYSES

	YES	NO	N/A
Equipment/Rinse Blank analyzed?	X		
Form Present?	X		

LIST CONTAMINANTS DETECTED IN FIELD AND EQUIPMENT BLANKS

Blank ID	Laboratory ID	Matrix	Analyte	Concen-tration	Units	10X	Comments
AH03203 (FB)	0311002-03						None
AH03205 (FB)	0311007-02						None
AH03209 (EB)	0311010-03						None

List of Anomalies/Recommended Actions

X **No action required**

(1) Sample results greater than 10X blank amount.
(2) Sample results non-detect.
(3) No associated samples.

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LABORATORY CONTROL SAMPLES (LCS/LCSD)

	YES	NO	NA
Form Present?	X		
%R and RPD within limits?	X		
Spike list match project required list?	X		
Results agree with raw data? (Level IV only)	X		

% RECOVERY AND RPD CALCULATION CHECK
Enter analysis date (mo/day/year), spike amount, LCS result, and LCSD result.
% Recoveries and RPD are automatically calculated.

Analysis Date	Spike Analyte	Spike Conc	LCS Result	LCSD Results	LCS %R	LCSD %R	RPD	Agree with lab?	QC Batch Number
5-Nov-03	Nitrate-N	4.423	4.495	NA	101.6%	NA	NA	YES	B3K0005-SRM1
6-Nov-03	Nitrate-N	4.423	4.5	NA	101.7%	NA	NA	YES	B3K0010-SRM1
7-Nov-03	Nitrate-N	4.423	4.503	NA	101.8%	NA	NA	YES	B3K0012-SRM1
11-Nov-03	Nitrate-N	4.423	4.518	NA	102.1%	NA	NA	YES	B3K0020-SRM1
12-Nov-03	Perchlorate	10	9.5	NA	95.0%	NA	NA	YES	B3K0021-BS1
12-Nov-03	Perchlorate	10	9.6	NA	96.0%	NA	NA	YES	B3K0021-BS2
13-Nov-03	Perchlorate	10	8.7	NA	87.0%	NA	NA	YES	B3K0029-BS1
13-Nov-03	Perchlorate	10	8.7	NA	87.0%	NA	NA	YES	B3K0029-BS2

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOPs 530R4 & 531R3

ACCEPTANCE LIMITS:

%R	RPD	
90-110	NA	Nitrate-N
85-115	NA	Perchlorate

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

LCS ID	Spike Analyte	% Recovery	RPD	Comments
				None

Recommended Actions

X **No action required**

MATRIX SPIKE/MATRIX SPIKE DUPLICATE ANALYSIS(MS/MSD)

	YES	NO	NA
Form Present?	X		
%R and RPD within limits?	X		
Spike list match project required list?	X		
Results agree with raw data? (Level IV only)	X		

% RECOVERY AND RPD CALCULATION CHECK
Enter analysis date (mo/day/year), spike amount, sample result, MS result, and MSD result
IF sample result is ND, enter "0". % Recoveries and RPD are automatically calculated.

Analysis Date	Spiked Sample	Spike Analyte	Spike Conc	Sample Results	MS Result	MSD Results	MS %R	MSD %R	RPD	Agree with lab?	QC Batch Number
5-Nov-03	0311002-01	Nitrate-N	5	12	17	17	100.00%	100.00%	0.00%	YES	B3K0005
6-Nov-03	0311007-01	Nitrate-N	5	1.1	5.9	5.9	96.00%	96.00%	0.00%	YES	B3K0010
12-Nov-03	0311007-01	Perchlorate	10	1.9	11	12	91.00%	101.00%	8.70%	YES	B3K0021
							#DIV/0!	#DIV/0!	#DIV/0!	YES	

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOPs 530R4 & 531R3

ACCEPTANCE LIMITS:

%R	RPD	
70-130	20%	Nitrate-N
80-120	15%	Perchlorate

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

Sample ID	Laboratory ID	Spike Analyte	% Recovery	RPD	Mx DF > or = 5X?	4X Rule Applies?	Comments
							None

Recommended Actions

- [X] **No action required**
- [ ] **Laboratory reported RPDs based on % recoveries; appropriate method is to calculate RPDs based on concentrations.**
- [ ] **Spike levels differed for MS and MSD.**
- [ ] **Qualify all samples in QC batch, unless otherwise noted in project plan.**

(1) 4X Rule.
(2) Dilution factor ≥ 5X.
(3) The parent sample was associated with an unrelated site.

LABORATORY DUPLICATE SAMPLE ANALYSIS

	YES	NO	N/A
Form Present?			X
One duplicate per every 20 samples?			X
All RPD within project limits?			X

List of Anomalies/Recommended Actions

☐ No action required

ENTER SAMPLE AND DUPLICATE RESULTS
% RPDs are automatically calculated.

Sample ID	Analyte	Sample Result	Duplicate Result	RPD	QC Batch Number
				#DIV/0!	
				#DIV/0!	
				#DIV/0!	
				#DIV/0!	

ACCEPTANCE CRITERIA REFERENCE:

ACCEPTANCE LIMITS: RPD

LIST ALL RECOVERIES OUTSIDE PROJECT LIMITS

Sample ID	Instrument	Analyte	RPD	Comments	QC Batch Number

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FIELD DUPLICATES

	YES	NO
Are original/field duplicate pairs identifiable?	X	
%RPD within project acceptance limits?	X	

RPD CALCULATION CHECK

IF sample result is ND, enter "0". RPD is automatically calculated

Original Sample ID	Original Lab ID	Matrix	Analyte	Orig. Results	Duplicate Sample ID	Duplicate Lab ID	Dup. Results	RPD	Absolute Difference	RL	Meets Criteria?
AH03201	0311002-01	Water	Perchlorate	4.7	AH03202	0311002-02	5	-6.19%	0.3		YES
AH03201	0311002-01	Water	Nitrate-N	12	AH03202	0311002-02	12	0.00%	0		YES
								#DIV/0!	0		
								#DIV/0!	0		
								#DIV/0!	0		
								#DIV/0!	0		

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOPs 530R4 & 531R3

ACCEPTANCE LIMITS:

	20%
CRITERIA FOR AQUEOUS RESULTS AT OR NEAR THE RL	+/- 1 X RL
CRITERIA FOR SOIL RESULTS AT OR NEAR THE RL	+/- 2 X RL

LIST ALL RPD OUTSIDE PROJECT LIMITS (DO NOT INCLUDE VALUES < RL)

Original Sample ID	Original Lab ID	Analyte	RPD	Comments
				None

Recommended Actions

X **No action required**

NC: Not calculated. The absolute difference between the sample result and the duplicate sample result is less than the reporting limit.
N/A: Not analyzed
NA: Not applicable. Calculation of the relative percent difference between the sample result and the duplicate sample result is not applicable.

REPORTING LIMITS

	YES	NO
Are the project-specified reporting limits (RLs) met for all project samples?	X	
Are the RLs for all soil samples raised by dry weight correction?	NA	
Are the RLs raised due to sample dilutions?		X
Was dilution required due to matrix interference?		X
Was dilution required due to high levels of TARGET analytes?		X
Are any samples non-detect at a raised RL? (if so, list below)		X

REPORTING LIMITS REFERENCE: EPA Region 9 Lab SOPs 530R4 & 531R3

If NO, then list:

Analyte	Samples Affected	Lab RL	Project RL	Comment
				None

ANALYTE LIST

	YES	NO
Does the reported target analyte list match the project required list?	X	

ANALYTE LIST REFERENCE: Chain of Custody

If NO, then list extra or missing analytes:

Analyte	Missing?	Extra?	Comment
			None

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INITIAL CALIBRATION

	YES	NO	NA
Performed before sample analysis?	X		
Calibration for each matrix?	X		
Calibration for each instrument?	X		
Correlation Coefficient meets acceptance criteria?	X		

List of Anomalies/Recommended /

X No action required

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOPs 530R4 & 531R3

ACCEPTANCE LIMITS: CORR COEF (r) 0.995

LIST ALL CORRELATION COEFFICIENTS THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Instrument ID	Matrix	Analyte	Corr Coefficient (r)	Comment
					None

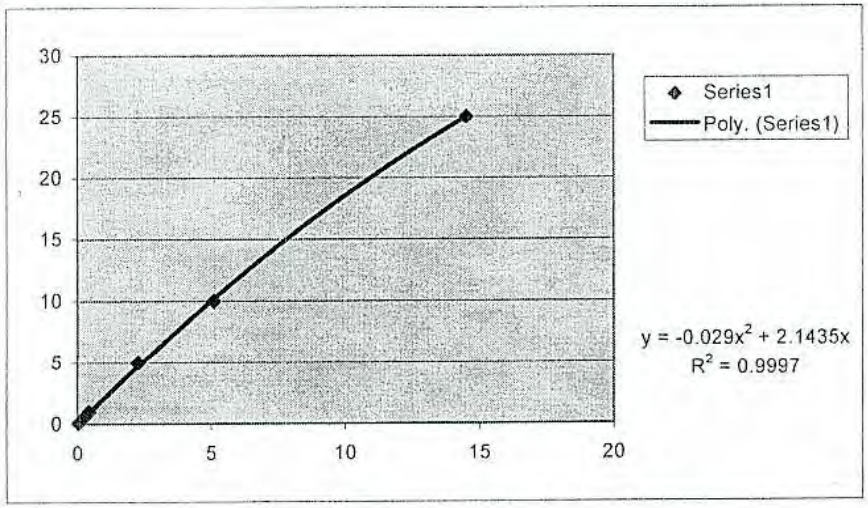
LIST ALL ICAL AND ASSOCIATED SAMPLES

Calibration Date	Instrument ID	Matrix	Analyte	Associated Samples
4-Nov-03	Dionex 120	Water	Nitrate-N	0311002-01 thru -03, 0311007-01 thru -03, 0311010-01 thru -04, 0311016-01
11-Nov-03	Dionex 600	Water	Perchlorate	0311002-01 thru -03, 0311007-01 thru -03, 0311010-01 thru -04, 0311016-01

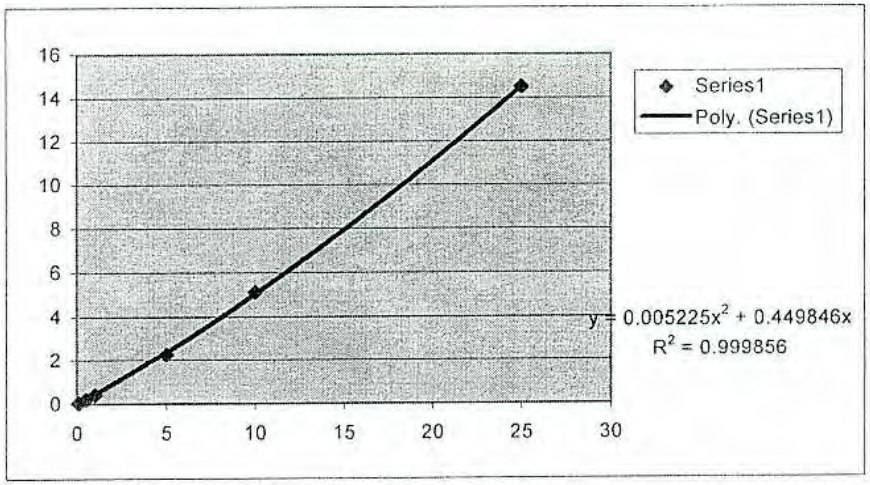
INITIAL CALIBRATION - QUADRATIC CURVE

Enter Calibration date (mo/day/year), instrument ID, analyte, standard responses and standard concentrations
X = response std and Y = amt std.

Calibration Date	4-Nov-03				
Instrument ID	Dionex 120				
Analyte	Nitrate-N			X	Y
Std Resp1	0.038	Std Conc1	0.1	0.038	0.1
Std Resp2	0.205	Std Conc2	0.5	0.205	0.5
Std Resp3	0.418	Std Conc3	1	0.418	1
Std Resp4	2.264	Std Conc4	5	2.264	5
Std Resp5	5.106	Std Conc5	10	5.106	10
Std Resp6	14.503	Std Conc6	25	14.503	25



Calibration Date	4-Nov-03				
Instrument ID	Dionex 120				
Analyte	Nitrate-N			Y	X
Std Resp1	0.038	Std Conc1	0.1	0.1	0.038
Std Resp2	0.205	Std Conc2	0.5	0.5	0.205
Std Resp3	0.418	Std Conc3	1	1	0.418
Std Resp4	2.264	Std Conc4	5	5	2.264
Std Resp5	5.106	Std Conc5	10	10	5.106
Std Resp6	14.503	Std Conc6	25	25	14.503



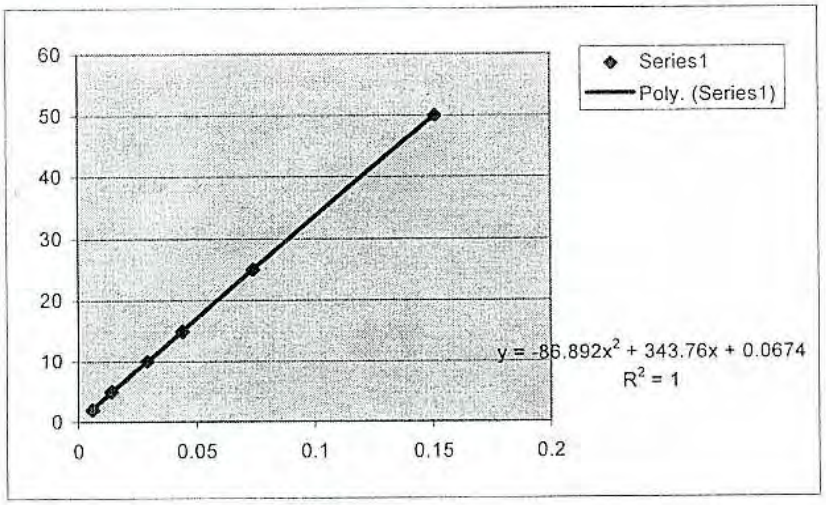
	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X(1)	

(1) Curve coefficients match those of the laboratory when the x/y axes are reversed. Sample results can be recalculated using the coefficients generated when the axes are not reversed. Laboratory forced curve through zero.

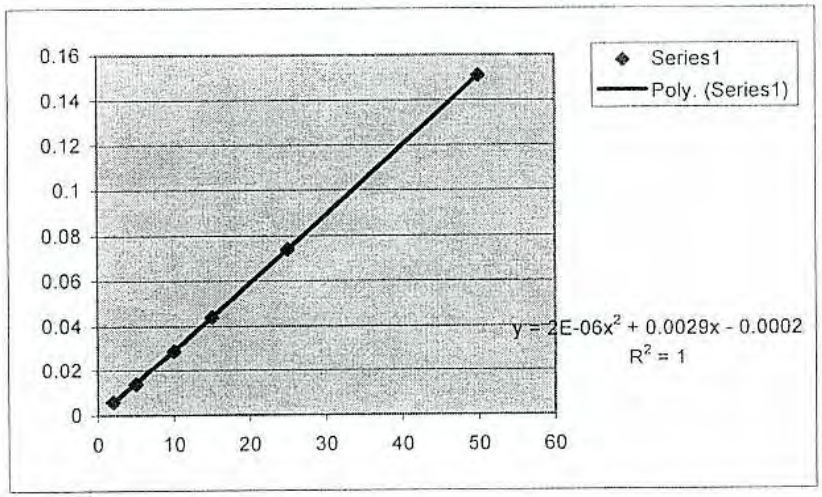
INITIAL CALIBRATION - QUADRATIC CURVE

Enter Calibration date (mo/day/year), instrument ID, analyte, standard responses and standard concentrations
X = response std and Y = amt std.

Calibration Date	11-Nov-03				
Instrument ID	Dionex 600				
Analyte	Perchlorate			X	Y
Std Resp1	0.006	Std Conc1	2	0.006	2
Std Resp2	0.014	Std Conc2	5	0.014	5
Std Resp3	0.029	Std Conc3	10	0.029	10
Std Resp4	0.044	Std Conc4	15	0.044	15
Std Resp5	0.074	Std Conc5	25	0.074	25
Std Resp6	0.151	Std Conc6	50	0.151	50



Calibration Date	11-Nov-03				
Instrument ID	Dionex 600				
Analyte	Perchlorate			Y	X
Std Resp1	0.006	Std Conc1	2	2	0.006
Std Resp2	0.014	Std Conc2	5	5	0.014
Std Resp3	0.029	Std Conc3	10	10	0.029
Std Resp4	0.044	Std Conc4	15	15	0.044
Std Resp5	0.074	Std Conc5	25	25	0.074
Std Resp6	0.151	Std Conc6	50	50	0.151



	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X(1)	

(1) Curve coefficients match those of the laboratory when the x/y axes are reversed. Sample results can be recalculated using the coefficients generated when the axes are not reversed.

DAILY CALIBRATION CHECK - NITRATE-N

RUN LOGS

	YES	NO	N/A
Run logs present in data package?	X		
All samples located on run logs?	X		
All dilutions located on run logs?			X
Are anomalies noted by the analyst?		X	

INITIAL AND CONTINUING CALIBRATION VERIFICATION

	YES	NO	N/A
Performed before sample analysis?	X		
Performed for each day of analysis?	X		
Performed for each instrument?	X		
Performed for every 10 samples?	X		
Raw data agree with forms? (Level IV only)	X		

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOP 530R4

ACCEPTANCE LIMITS: %R 90-110

LIST ALL %RECOVERY THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Time	Instrument ID	Analyte	% Recovery	Comments
					None

List of Anomalies/Recommended Actions

X **No action required**

CONTINUED

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DAILY CALIBRATION CHECK - NITRATE-N [CONTINUED]

LIST ALL PRECEEDING ICV/CCV AND ASSOCIATED SAMPLES

Calibration Date	Time	Instrument ID	Matrix	Analyte	Associated Samples
5-Nov-03	1324	Dionex 120	Water	Nitrate-N	0311002-01 thru -03
5-Nov-03	1641	Dionex 120	Water	Nitrate-N	Closing
6-Nov-03	1546	Dionex 120	Water	Nitrate-N	0311007-01 thru -03
6-Nov-03	1831	Dionex 120	Water	Nitrate-N	Closing
7-Nov-03	1158	Dionex 120	Water	Nitrate-N	0311010-01, -03, -04
7-Nov-03	1353	Dionex 120	Water	Nitrate-N	Bracketing
7-Nov-03	1503	Dionex 120	Water	Nitrate-N	0311010-02
7-Nov-03	1625	Dionex 120	Water	Nitrate-N	Closing
11-Nov-03	1250	Dionex 120	Water	Nitrate-N	0311016-01
11-Nov-03	1355	Dionex 120	Water	Nitrate-N	Closing

DAILY CALIBRATION CHECK - PERCHLORATE

RUN LOGS

	YES	NO	N/A
Run logs present in data package?	X		
All samples located on run logs?	X		
All dilutions located on run logs?			X
Are anomalies noted by the analyst?		X	

METHOD AND INSTRUMENT PERFORMANCE CHECK STANDARDS

	YES	NO	N/A
QCS standard analyzed?	X		
QCS % recovery within 90%-110% of actual?	X		
IPC standard analyzed?	X		
IPC standard conductance within +/-10% of original?	X		
IPC standard perchlorate recovery between 80%-120%?	X		
ICV standard analyzed?	X(2)		
ICV standard perchlorate recovery between 75%-125%?	X		
CCV standards analyzed?	X		
CCV standards analyzed every 10 samples?	X		
CCV standard perchlorate recoveries between 85%-115%?	X		
Conductance of all samples recorded?	X		
Conductance of all samples < MCT?	X(3)		
List MCT value	2520 (3)		

INITIAL AND CONTINUING CALIBRATION VERIFICATION

	YES	NO	N/A
Performed before sample analysis?	X		
Performed for each day of analysis?	X		
Performed for each instrument?	X		
Performed for every 10 samples?	X		
Raw data agree with forms? (Level IV only)	X		

ACCEPTANCE CRITERIA REFERENCE: EPA Region 9 Lab SOP 531R3

ACCEPTANCE LIMITS: %R 85-115

LIST ALL %RECOVERY THAT DO NOT MEET ACCEPTANCE CRITERIA:

Calibration Date	Time	Instrument ID	Analyte	% Recovery	Comments
					None

List of Anomalies/Recommended Actions

X **No action required**

THE QCS WAS ANALYZED DIRECTLY AFTER THE ICAL.

(2) LABORATORY CALLS THIS STANDARD QL.

(3) AN MCT STUDY WAS ANALYZED ON 11/13/03: THE STUDY CONSISTED OF SIX MCT STANDARDS AT DIFFERENT CONCENTRATIONS. ALL SAMPLE CONDUCTIVITIES WERE LESS THAN THE LOWEST MCT VALUE FROM THE STUDY. THE LOWEST MCT (300 mg/L anions) HAD A CONDUCTIVITY OF 2520 umhos/cm.

Definitions:

QCS - Second source standard analyzed after an initial calibration. 90%-110%
MCT - Matrix conductivity threshold. Standard with high conductance contains perchlorate at RL (2 ppb)
IPC - Instrument performance check - check of MCT
ICV - Initial low level continuing check standard at RL
CCV - mid and high level check standards analyzed every 10 samples

CONTINUED

DAILY CALIBRATION CHECK - PERCHLORATE [CONTINUED]

LIST ALL PRECEEDING ICV/CCV AND ASSOCIATED SAMPLES

Calibration Date	Time	Instrument ID	Matrix	Analyte	Associated Samples
11-Nov-03	2326	Dionex 600	Water	Perchlorate	0311002-01 thru -03, 0311007-01, -02
12-Nov-03	0344	Dionex 600	Water	Perchlorate	0311010-01 thru -04
12-Nov-03	0707	Dionex 600	Water	Perchlorate	Closing
14-Nov-03	0006	Dionex 600	Water	Perchlorate	0311016-01
14-Nov-03	0328	Dionex 600	Water	Perchlorate	0311007-03
14-Nov-03	0537	Dionex 600	Water	Perchlorate	Closing

CONTINUING CALIBRATION - QUADRATIC CURVE

CCV (ng) = b+(m1*Ax)+(m2*Ax^2)
A_x = Area of compound m1 = first coefficient from quadratic curve
b = intercept from linear curve m2 = second coefficient from quadratic curve

Date:	11-Nov-03	
Time:	1605	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	QCS	
A_x=	0.061	
b=	0.0674	20.7134349
m1=	343.76	
m2=	-86.892	
True Amt	20	
%D	103.57%	

Date:	11-Nov-03	
Time:	2326	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	IPC	
A_x=	0.027	
b=	0.0674	9.28557573
m1=	343.76	
m2=	-86.892	
True Amt	10	
%D	92.86%	

Date:	12-Nov-03	
Time:	0003	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	ICV(QL)	
A_x=	0.005	
b=	0.0674	1.7840277
m1=	343.76	
m2=	-86.892	
True Amt	2	
%D	89.20%	

Date:	12-Nov-03	
Time:	0344	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	CCV	
A_x=	0.071	
b=	0.0674	24.0363374
m1=	343.76	
m2=	-86.892	
True Amt	25	
%D	96.15%	

Date:	12-Nov-03	
Time:	0707	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	CCV	
A_x=	0.072	
b=	0.0674	24.3676719
m1=	343.76	
m2=	-86.892	
True Amt	25	
%D	97.47%	

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

	YES	NO
AMOUNTS INJECTED CONSISTENT THROUGHOUT ANALYTICAL SEQUENCE?	X	

RESULTS AGREE TO +/- 1 IN THE LAST SIGNIFICANT FIGURE.

CONTINUING CALIBRATION - QUADRATIC CURVE

CCV (ng) = b+(m1*Ax)+(m2*Ax^2)
A_x = Area of compound m1 = first coefficient from quadratic curve
b = intercept from linear curve m2 = second coefficient from quadratic curve

Date:	11-Nov-03	
Time:	1605	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	QCS	
A_x=	0.061	
b=	0.0674	20.7134349
m1=	343.76	
m2=	-86.892	
True Amt	20	
%D	103.57%	

Date:	13-Nov-03	
Time:	1930	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	IPC	
A_x=	0.026	
b=	0.0674	8.94642101
m1=	343.76	
m2=	-86.892	
True Amt	10	
%D	89.46%	

Date:	13-Nov-03	
Time:	2007	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	ICV(QL)	
A_x=	0.005	
b=	0.0674	1.7840277
m1=	343.76	
m2=	-86.892	
True Amt	2	
%D	89.20%	

Date:	14-Nov-03	
Time:	0006	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	CCV	
A_x=	0.065	
b=	0.0674	22.0446813
m1=	343.76	
m2=	-86.892	
True Amt	25	
%D	88.18%	

Date:	14-Nov-03	
Time:	0328	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	CCV	
A_x=	0.066	
b=	0.0674	22.3770584
m1=	343.76	
m2=	-86.892	
True Amt	25	
%D	89.51%	

Date:	14-Nov-03	
Time:	0537	
Instrument ID:	Dionex 600	
Compound:	Perchlorate	
AMOUNT-CCV	CCV	
A_x=	0.067	
b=	0.0674	22.7092618
m1=	343.76	
m2=	-86.892	
True Amt	25	
%D	90.84%	

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

	YES	NO
AMOUNTS INJECTED CONSISTENT THROUGHOUT ANALYTICAL SEQUENCE?	X	

RESULTS AGREE TO +/- 2 IN THE LAST SIGNIFICANT FIGURE.

MDL STUDY

	YES	NO	N/A
MDL values present in the package?		X	
Is MDL study provided?		X	
Study performed within 1 year of sample analysis?			X
MDLs support laboratory reporting limits? (If no, list)			X

Analyte	Comments
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL
	RL < 3X MDL

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SAMPLE CALCULATION WORKSHEET - QUADRATIC CURVE

CALCULATIONS: mg/L=(b+(m1*Ax)+(m2*Ax^2))*Vf*Df/(Vi*Vo)

Sample ID: AH03210
Laboratory ID: 0311016-01
Compound: Nitrate N **REPORTED VALUE: 7.7 mg/L**

Ax=	3.796	7.71884714	Area cmpd in sample
b=	0		Coefficient b from curve
m1=	2.1435		Coefficient m1 from curve
m2=	-0.029		Coefficient m2 from curve
Vf=	1		Volume of extract, in uL
Df=	1		Dilution factor
Vi=	1		Volume of extract injected, in uL
Ws/Vw=	1		Volume of sample, in mL (or Wt in g)
D=	1		Dry-weight (1 if dry-wt not taken into acct)

	YES	NO
CALCULATED VALUES MATCH REPORTED VALU	X*	

*** VALUES MATCH TO +/- 1 IN THE LAST SIGNIFICANT FIGURE FOR RESULTS GREATER THAN 1 mg/L NO3-N AND +/- 3 IN THE LAST SIGNIFICANT FIGURE FOR RESULTS LESS THAN 1 mg/L NO3-N.**

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SAMPLE CALCULATION WORKSHEET - QUADRATIC CURVE

CALCULATIONS: mg/L=(b+(m1*Ax)+(m2*Ax^2))*Vf*Df/(Vi*Vo)

Sample ID: AH03204
Lab ID: 0311007-01
Compound: Perchlorate **REPORTED VALUE: 1.9 ug/L**

Ax=	0.006	**2.12683189**	Area cmpd in sample
b=	0.0674		Coefficient b from curve
m1=	343.76		Coefficient m1 from curve
m2=	-86.892		Coefficient m2 from curve
Vf=	1		Volume of extract, in uL
Df=	1		Dilution factor
Vi=	1		Volume of extract injected, in uL
Ws/Vw=	1		Volume of sample, in mL (or Wt in g)
D=	1		Dry-weight (1 if dry-wt not taken into acct)

SAMPLE VOLUMES ARE NOT TAKEN INTO ACCOUNT, BECAUSE THE CALIBRATIC STANDARDS ARE TREATED SAME AS SAMPLES.

	YES	NO
CALCULATED VALUES MATCH REPORTED VALUES?	X	

*** VALUES MATCH TO +/- 2 IN THE LAST SIGNIFICANT FIGURE.**

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IDENTIFICATION AND QUANTITATION

For Level IV calculate the results of all detects for project samples.
Use the worksheet labeled "calculation."

☐ **Qualifications from QuikVal reports are included herein (reason codes 001, 009 and 010)**
☐ **Qualifications were not indicated in QuikVal reports.**

List all samples requiring qualification here:

Sample ID	Lab ID	Analyte	Result	Lab Qualifier	Calc Check	Qualifier	Reason Code
AH03210	0311016-01	Nitrate-N	7.7			J	001

[X*] All Level IV sample results were re-calculated and verified to be correctly reported by the laboratory.
* VALUES MATCH TO +/- 1 IN THE LAST SIGNIFICANT FIGURE FOR RESULTS GREATER THAN 1 mg/L NO3-N AND +/- 3 IN THE LAST SIGNIFICANT FIGURE FOR RESULTS LESS THAN 1 mg/L NO3-N. VALUES MATCH TO +/- 2 IN THE LAST SIGNIFICANT FIGURE FOR ClO4.

CONTINUED

QUALIFIED DATA CONTINUED

Qualifiers

U The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample. A minus sign (-) indicates the numerical value has a low bias. A plus sign (+) indicates the numerical value has a high bias.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified. Rejected results are not usable for any purpose.

DataVal Reason Codes

001 Exceeded holding time.
002 Blank contamination.
003 Associated initial calibration showed elevated %RSD for compound.
004 Correlation coefficient < 0.995.
005 Average relative response factor < 0.05.
006 Associated continuing calibration showed elevated %D for compound.
007 Relative response factor < 0.05.
008 Surrogate recovery was outside limits.
009 Laboratory control sample recovery exceeded acceptance criteria.
010 Matrix spike recovery exceeded acceptance criteria.
011 The area of the internal standard exceeded acceptance criteria.
012 Retention time exceeded criteria for this compound.
013 Mass spectrum did not match the reference spectrum.
014 Tentatively identified compound (TIC).
015 Value exceeded the linear range of the instrument and was not re-analyzed.
016 Compounds/components co-elute.
017 Results reported below the quantitation limit.
018 Laboratory duplicate relative percent differences (RPD) outside acceptance criteria.
019 Field duplicate RPD outside acceptance criteria.
020 Percent difference between columns exceeded 25%.
021 Laboratory control sample RPD outside acceptance criteria.
022 Matrix spike sample RPD outside acceptance criteria.
023 Serial dilution percent difference outside acceptance criteria.
024 Retention time exceeded established window.
025 ICP Interference Check Sample had percent recoveries outside the 80%-120% criteria.
026 CRI/CRA (detection limit standard) failed acceptance criteria.
100 Other.