

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

Validation report not required for EES samples.

[illegible]

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132211

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05/17/2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	12:42		MEDIA:	UA	
PRS ID:	OK		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-45 S1		FIELD PREP:	F	
LOCATION TYPE:	OK		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM _____ Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Benham & A. Stanford

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 5/17/17 1550	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/17/17 1558
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132212

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-17-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	14:36		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-45 S2		FIELD PREP:	F	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-All Metals	1 LITER POLY	1	HNO3 ICE	Y	NA
	WSP-CR52/53	1 LITER POLY	1	ICE		
	WSP- GENINORG+PerChlorat e	1 LITER POLY	1	ICE		
	WSP-N15/O18- NO3	40 ML SEPTUM AMBER GLASS	2	ICE		
	WSP- NH3+NO3/NO2	500 ML AMBER GLASS	1	H2SO4		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham, A. Stanfield

RELINQUISHED BY (Printed Name) (Signature)	Date/Time 05/17/17 1550	RECEIVED BY (Printed Name) (Signature)	Date/Time 5/17/17 1550
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132955

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):			FIELD MATRIX:	W	
TIME COLLECTED (HH:MM):	12:42		MEDIA:	UA	
PRS ID:			SAMPLE TECH CODE:		
LOCATION ID:	R-45 S1		FIELD PREP:	UF	
LOCATION TYPE:			FIELD QC TYPE:	TEST	
TOP DEPTH:			SAMPLE USAGE:	TRACER	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
	WSP-EES- Tracers(CrStudy)+D2H	40 mL Glass	2	NONE		

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT): T. Bonham, A. Stanfield

RELINQUISHED BY (Printed Name) Allizyn Stanfield (Signature) <i>[Signature]</i>	Date/Time 5/17/17 1550	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>[Signature]</i>	Date/Time 5/17/17 1550
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/27/2017

SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11212

EVENT NAME: Mortandad/Sandia (Cr Inv/MDA C)
MY2017 Q3

SAMPLE ID: CAMO-17-132956

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	05-17-2017	OK	FIELD MATRIX:	W	OK
TIME COLLECTED (HH:MM):	14:36		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-45 S2		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	TEST	
TOP DEPTH:			SAMPLE USAGE:	TRACER	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / NA

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	WSP-EES- Tracers(CrStudy)+D2H	40 mL Glass	2	NONE	Y	NA

SAMPLE COMMENTS:

LOCATION COMMENTS:

FIELD PARAMETERS:

Sample Time _____ HH:MM Dissolved Oxygen _____ Flow (in gpm) _____
Oxidation-Reduction _____ pH _____ Specific _____
Potential _____ Conductance _____
Temperature _____ Turbidity _____

COLLECTED BY (PRINT):

T. Bonham, A. Stanfield

RELINQUISHED BY (Printed Name) Allison Stanfield (Signature) <i>[Signature]</i>	Date/Time 5/17/17 1550	RECEIVED BY (Printed Name) S. Sherwood (Signature) <i>[Signature]</i>	Date/Time 5/17/17 1550
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 04/27/2017

[illegible]

Los Alamos National Laboratory

EES-14 Hydrology, Geochemistry, and Geology Laboratory

MS-D469, Building 494, Los Alamos, NM. 87545

COC ID	LAB SAMPLE ID	ANALYSIS METHOD	ANALYTE CODE	RESULT	MDL	LAB QUALIFIER	QC_BATCH_ID	ANALYSIS DATE
2017-1548	CAMO-17-132955	SW-846:8330	130-14-3	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	1655-29-4	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	1655-35-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	1655-43-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	1655-45-4	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	5182-30-9	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	532-02-5	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132955	SW-846:8330	6654-64-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	130-14-3	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	1655-29-4	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	1655-35-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	1655-43-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	1655-45-4	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	5182-30-9	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	532-02-5	0.0020	0.00200	U	TRACERS20170518	5/18/2017
2017-1548	CAMO-17-132956	SW-846:8330	6654-64-2	0.0020	0.00200	U	TRACERS20170518	5/18/2017

Sequence Overview**Sequence Details**

Name: 05182017 NDS-EP
Directory: Instrument Data\U3000\HPLC 2017
Data Vault: ChromeleonLocal
No. of Injections: 14
Created On 06/Jan/16 16:06:52
Created By Los Alamos National
Updated On 23/May/17 08:05:38
Updated By Los Alamos National

Injection Details

No.	Injection Name	Position	Type	Level	Inject Time	Status
1	100 ppb	RA2	Calibration Standard	03	18/May/17 09:02:31	Finished
2	20 ppb	RA2	Calibration Standard	03	18/May/17 09:53:16	Finished
3	50 ppb	RA2	Calibration Standard	03	18/May/17 10:44:04	Finished
4	10 ppb	RA2	Calibration Standard	03	18/May/17 11:34:51	Finished
5	80 ppb	RA2	Calibration Standard	03	18/May/17 12:25:42	Finished
6	100 ppb	RA2	Calibration Standard	03	18/May/17 13:16:35	Finished
7	check std 10 ppb	RA3	Unknown		18/May/17 14:07:29	Finished
8	Check std 1 ppb	RA5	Unknown		18/May/17 14:58:23	Finished
9	di waTER	RA4	Unknown		18/May/17 15:49:16	Finished
10	CAMO-17-132959	RA6	Unknown		18/May/17 16:40:11	Finished
11	CAMO-17-132957	RA7	Unknown		18/May/17 17:31:04	Finished
12	CAMO-17-132955	RA8	Unknown		18/May/17 18:21:58	Finished
13	CAMO-17-132956	RB1	Unknown		18/May/17 19:12:51	Finished
14	di waTER	RA4	Unknown		18/May/17 20:03:46	Finished

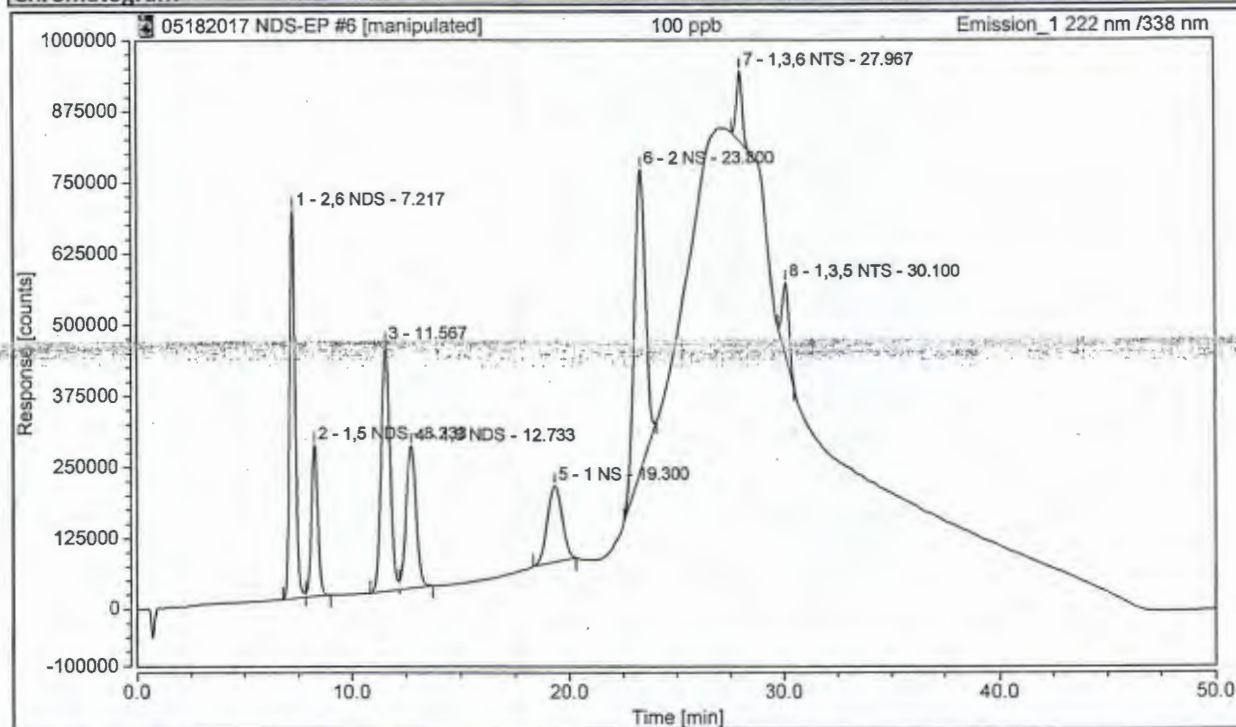
Chromatogram and Results

Injection Details

Injection Name: 100 ppb
 Vial Number: RA2
 Injection Type: Calibration Standard
 Calibration Level: 03
 Instrument Method: NDS 2016 RAMP - Right pump
 Processing Method: 1,3,5 1,3,6 NTS Quant
 Injection Date/Time: 18/May/17 13:16

Run Time (min): 50.00
 Injection Volume: 50.00
 Channel: Emission_1
 Wavelength: 222.0
 Bandwidth: 2
 Dilution Factor: 1.0000
 Sample Weight: 1.0000

Chromatogram



Integration Results

No.	Peak Name	Retention Time min	Area counts*min	Height counts	Relative Area %	Relative Height %	Amount mg/L
1	2,6 NDS	7.22	209089	682657	18.18	26.77	0.10
2	1,5 NDS	8.23	92166	266649	8.01	10.46	0.10
3		11.57	205921	433645	17.90	17.01	n.a.
n.a.	2,7 NDS	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	1,6 NDS	12.73	131415	249796	11.43	9.80	0.10
5	1 NS	19.30	107659	134870	9.36	5.29	0.10
6	2 NS	23.30	319970	529246	27.82	20.76	0.10
7	1,3,6 NTS	27.97	36922	123343	3.21	4.84	0.10
8	1,3,5 NTS	30.10	47052	129666	4.09	5.09	0.10
Total:			1150194	2549873	100.00	100.00	

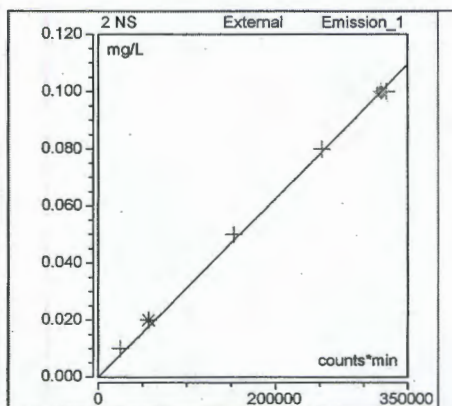
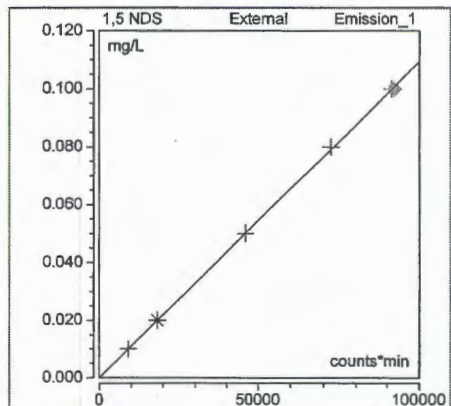
Calibration

Calibration Deta 2,6 NDS

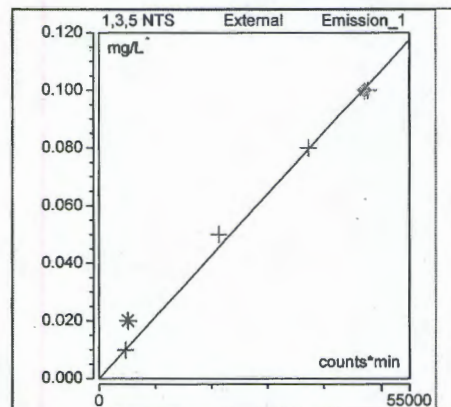
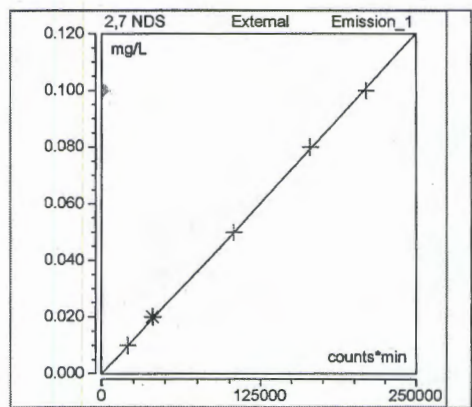
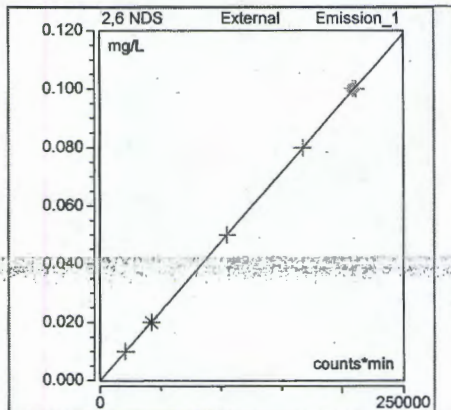
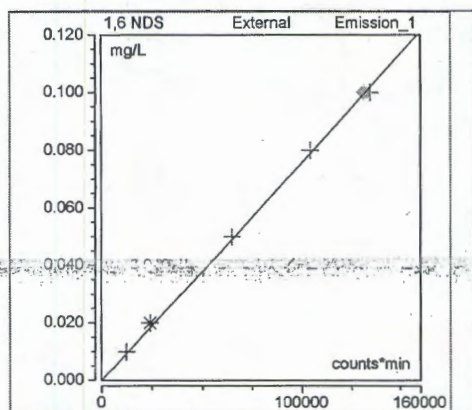
Calibration Type	Lin	Offset (C0)	0.0000
Evaluation Type	Area	Slope (C1)	0.0000
Number of Calibra	5	Curve (C2)	0.0000
Number of disable	1	R-Square	0.9999

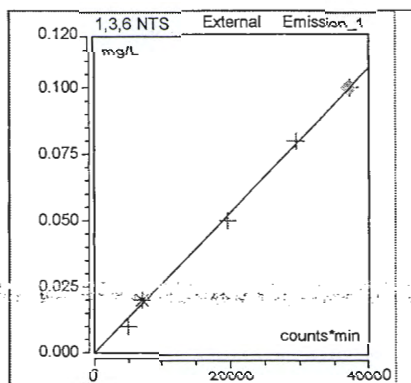
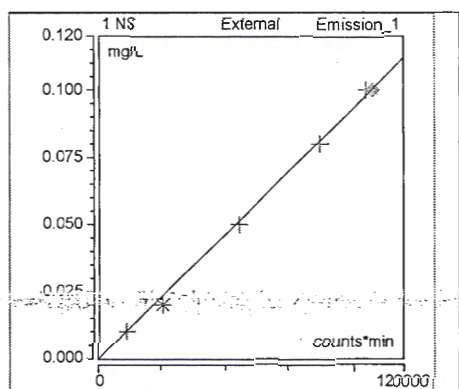
Calibration Results

No.	Injection Name	R^2 %	R^2 %	R^2 %	R^2 %	R^2 %	R^2 %	R^2 %	R^2 %
		2,6 NDS	1 NS	1,5 NDS	1,6 NDS	2 NS	2,7 NDS	1,3,5 NTS	1,3,6 NTS
1	100 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73
2	20 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73
3	50 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73
4	10 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73
5	80 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73
6	100 ppb	99.99	99.88	99.97	99.88	99.76	99.97	99.60	99.73



NS report 2016 ALL8/Calibration





[illegible]

MS-D469, Building 494, Los Alamos, NM. 87545

Tuesday, January 30, 2018

Nitrate calibrated data

Date analyzed:
Operator:
Isoprime data file:

7/20/2017
George Perkins
Nitrate Bugs 7/20/2017

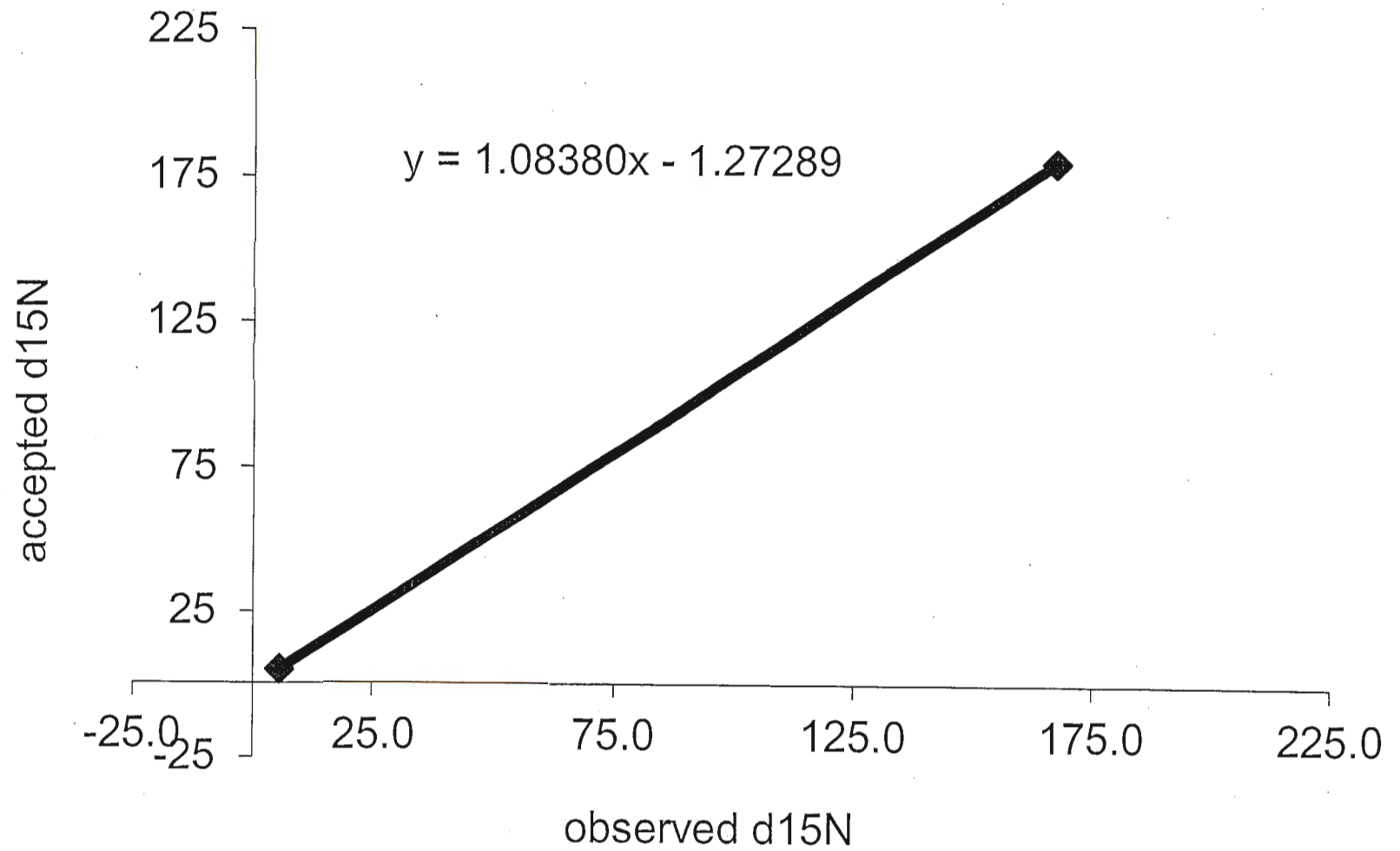
Generation of calibrat		$\delta^{15}\text{N}$ Value		$\delta^{18}\text{O}$	$\delta^{18}\text{O}$	$\delta^{17}\text{O}$
		actual	obs	actual	measured	actual
KNO ₃	USGS35	2.7		57.5		51.5
KNO ₃	USGS32	180.0	167.26	25.7		
KNO ₃	IAEA-NO3	4.7	5.51	25.6	20.90	
KNO ₃	USGS34	-1.8		-27.9	-27.44	15.37
slope						b-int.
$\delta^{18}\text{O} =$						2.47
$\delta^{15}\text{N} =$						-1.27
N-linearity		0.0000				
O-linearity		0.0000				

Sample #	Sample Name	RT	Pk Ht	Raw d15N	Raw d18O	Corr d15N	Corr d18O	corr. d15N	corr. d18O	Comment
Sample Number	Name	RT (Sec)	Height (nA)	15N	18O	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
6	air-1 7-20-17.raw	243.8	0.13	30.46	52.94	31.74	61.07	31.74	61.07	
7	IAEA-NO3-1 7-20-2017.raw	244.9	9.28	5.41	21.16	4.60	25.89	4.60	25.89	
8	IAEA-NO3-2 7-20-2017.raw	247.3	8.75	5.65	20.53	4.85	25.20	4.85	25.20	
9	USGS32-1 7-20-2017.raw	241.7	9.23	167.26	21.39	180.00	26.15	180.00	26.15	
10	USGS34-1 7-20-2017.raw	242.7	8.71	-1.47	-27.44	-2.86	-27.90	-2.86	-27.90	
11	CrCH2-17-129564 7-20-2017.raw	242.6	7.66	15.25	-0.54	15.26	1.87	15.26	1.87	
12	CAWA-17-132587 7-20-2017.raw	241.4	8.94	6.01	-3.10	5.25	-0.96	5.25	-0.96	
13	CAMO-17-132211 7-20-2017.raw	239.8	8.10	5.78	-3.96	4.99	-1.92	4.99	-1.92	
14	CAMO-17-132212 7-20-2017.raw	243.5	8.17	6.52	-4.16	5.79	-2.13	5.79	-2.13	
15	CAMO-17-132523 7-20-2017.raw	246.8	7.80	2.65	-4.45	1.60	-2.46	1.60	-2.46	
16	CrIN6-17-142163 7-20-2017.raw	242.0	8.00	9.37	-2.45	8.88	-0.24	8.88	-0.24	
17	IAEA-NO3-3 7-20-2017.raw	241.5	8.75	5.39	21.05	4.57	25.77	4.57	25.77	
18	Blank 7-20-2017.raw	243.3	0.06	57.39	109.28	60.93	123.43	60.93	123.43	
19	CrCH2-17-129567 7-20-2017.raw	254.7	6.68	15.59	0.84	15.62	3.40	15.62	3.40	
20	CrCH2-17-129560 7-20-2017.raw	245.5	7.10	15.90	-0.24	15.96	2.21	15.96	2.21	
21	CrCH2-17-129561 7-20-2017.raw	243.3	7.29	16.27	0.23	16.36	2.72	16.36	2.72	

22	CrCH2-17-129562 7-20-2017.raw	243.9	8.31
23	CrCH2-17-129563 7-20-2017.raw	245.0	7.82
24	IAEA-NO3-4 1 7-20-2017.raw	244.9	10.05
25	CrCH2-17-128860 7-20-2017.raw	243.4	7.99
26	CrCH2-17-128861 7-20-2017.raw	244.6	7.78
27	CrCH2-17-129558 7-20-2017.raw	243.9	8.66
28	CrEx-1-2-6-17 7-20-2017.raw	247.2	6.70
29	CrCH2-17-129559 7-20-2017.raw	241.9	4.94
30	SCS-2-4-21-15-N-O-Iso 7-20-2017.raw	238.1	0.17
31	Malink-2 7-20-2017.raw	204.1	0.02
32	IAEA-NO3-5 7-20-2017.raw	202.0	0.01
33	USGS32-2 7-20-2017.raw	199.2	0.00

15.64	0.37	15:68	2.88	15:68	2.88
15.37	0.73	15:38	3:28	15:38	3.28
5.60	20.84	4:79	25:54	4:79	25.54
15.74	0.34	15:79	2:84	15:79	2.84
15.43	-0.17	15:45	2:28	15:45	2.28
16.30	0.25	16:40	2:74	16:40	2.74
8.36	-3.78	7:79	-1:72	7:79	-1.72
7.40	-1.31	6:74	1:02	6:74	1.02
16.30	38.68	16:40	45:29	16:40	45.29
521.84	997.27	564:30	1106:35	564:30	1106.35
537.77	1006.90	581:57	1117:01	581:57	1117.01
544.32	1047.56	588:66	1162:01	588:66	1162.01
		1:27	2:47	1:27	2.47
		4.70	25.60	4.70	25.60

d15N calibration



d18O Calibration

