Mountain States ACCUTEST LABORATORIES

09/30/11

Technical Report for

Ecos Environmental

Noble

Noble091911

Accutest Job Number: D27762

Sampling Date: 09/19/11

Report to:

Ecos Environmental
6690 Highway 82
Glenwood Springs, CO 81601
zpevec@ecosenvironmental.com

ATTN: Zuleika Pevec

Total number of pages in report: **72**

ACCREDITED IN ACCORDANCE WITH nelac

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

John Hamilton
Laboratory Director

Client Service contact: Renea Jackson 303-425-6021

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7 8 9

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Sample Summary

Ecos Environmental

Job No: D27762

Noble
Project No: Noble091911

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D27762-1	09/19/11	12:40	ZP	09/20/11	SO	Soil	NOBLE091911-WC1
D27762-2	09/19/11	12:48	ZP	09/20/11	SO	Soil	NOBLE091911-WC2
D27762-3	09/19/11	12:55	ZP	09/20/11	SO	Soil	NOBLE091911-WC3
D27762-4	09/19/11	13:00	ZP	09/20/11	SO	Soil	NOBLE091911-WC4
D27762-5	09/19/11	13:10	ZP	09/20/11	SO	Soil	NOBLE091911-WC5
D27762-6	09/19/11	00:00	ZP	09/20/11	SO	Soil	NOBLE091911

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Ecos Environmental	**Job No**	D27762
Site:	Noble	**Report Dat**	9/30/2011 10:59:26 AM

On 09/20/2011, 6 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 4 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D27762 was assigned to the project. The lab sample IDs, client sample IDs, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix SO **Batch ID:** V5V1048

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27929-1MS, D27929-1MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8015B

Matrix SO **Batch ID:** GGB747

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27795-1MS, D27795-1MSD were used as the QC samples indicated.

Matrix SO **Batch ID:** GGB748

- All samples were analyzed within the recommended method holding time.
- Sample(s) D27762-2MS, D27762-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Extractables by GC By Method SW846-8015B

Matrix SO **Batch ID:** OP4519

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D27796-8MS, D27796-8MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals By Method SW846 6010B

Matrix	AQ	Batch ID:	MP5844

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27613-1RAMS, D27613-1RAMSD were used as the QC samples for the metals analysis.

Matrix	SO	Batch ID:	MP5877

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D28038-1MS, D28038-1MSD, D28038-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Arsenic, Cadmium, Silver are outside control limits for sample MP5877-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals By Method SW846 7471A

Matrix	SO	Batch ID:	MP5887

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27762-1MSD, D27762-1MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. Spike recovery indicates possible matrix interference.

Wet Chemistry By Method DEPT.OF AG, BOOK N9

Matrix	SO	Batch ID:	GP5539

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Wet Chemistry By Method SM19 2540B M

Matrix	SO	Batch ID:	GN11641

- The data for SM19 2540B M meets quality control requirements.

Matrix	SO	Batch ID:	GN11682

- The data for SM19 2540B M meets quality control requirements.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	SO	Batch ID:	MP5844

- D27762-6 for Sodium Adsorption Ratio: Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+(Mg meq/L)/2]

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	NOBLE091911-WC1		
Lab Sample ID:	D27762-1	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8260B	**Percent Solids:**	73.1
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17637.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.02 g	5.0 ml	50.0 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	345	170	76	ug/kg	
108-88-3	Toluene	7700	350	170	ug/kg	
100-41-4	Ethylbenzene	2330	350	86	ug/kg	
1330-20-7	Xylene (total)	42000	690	350	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	128%		61-130%
460-00-4	4-Bromofluorobenzene	129%		53-131%
17060-07-0	1,2-Dichloroethane-D4	117%		62-130%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC1		
Lab Sample ID:	D27762-1	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8015B	**Percent Solids:**	73.1
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13109.D	1	09/21/11	SK	n/a	n/a	GGB747
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.0 g	5.0 ml	50.0 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	839	35	17	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	100%		60-140%

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

Report of Analysis

Client Sample ID: NOBLE091911-WC1
Lab Sample ID: D27762-1
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/19/11
Date Received: 09/20/11
Percent Solids: 73.1

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10212.D	1	09/22/11	KV	09/22/11	OP4519	GFD478
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	779	18	12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	76%		61-142%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC1		
Lab Sample ID:	D27762-1	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	73.1
Project:	Noble		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	4.3	3.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Barium	1260	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Cadmium	< 1.4	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Chromium	18.7	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Lead	8.8	6.8	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Mercury	< 0.15	0.15	mg/kg	1	09/29/11	09/29/11	JB	SW846 7471A [2]	SW846 7471A [4]
Selenium	< 6.8	6.8	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Silver	< 4.1	4.1	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA1857
(2) Instrument QC Batch: MA1859
(3) Prep QC Batch: MP5877
(4) Prep QC Batch: MP5887

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC2		
Lab Sample ID:	D27762-2	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8260B	**Percent Solids:**	46.8
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17632.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.14 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	160	71	ug/kg	
108-88-3	Toluene	194	320	160	ug/kg	J
100-41-4	Ethylbenzene	ND	320	80	ug/kg	
1330-20-7	Xylene (total)	391	640	320	ug/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	105%		61-130%
460-00-4	4-Bromofluorobenzene	104%		53-131%
17060-07-0	1,2-Dichloroethane-D4	124%		62-130%

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

Report of Analysis

Client Sample ID: NOBLE091911-WC2
Lab Sample ID: D27762-2
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/19/11
Date Received: 09/20/11
Percent Solids: 46.8

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13119.D	1	09/22/11	SK	n/a	n/a	GGB748
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	32	16	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	78%		60-140%

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

Report of Analysis

Client Sample ID: NOBLE091911-WC2
Lab Sample ID: D27762-2
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/19/11
Date Received: 09/20/11
Percent Solids: 46.8

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10213.D	1	09/23/11	KV	09/22/11	OP4519	GFD478
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	198	28	18	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	81%		61-142%

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

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC2		
Lab Sample ID:	D27762-2	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	46.8
Project:	Noble		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	6.6	5.5	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Barium	377	2.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Cadmium	< 2.2	2.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Chromium	19.8	2.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Lead	13.6	11	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Mercury	< 0.19	0.19	mg/kg	1	09/29/11	09/29/11	JB	SW846 7471A [2]	SW846 7471A [4]
Selenium	< 11	11	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Silver	< 6.5	6.5	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA1857
(2) Instrument QC Batch: MA1859
(3) Prep QC Batch: MP5877
(4) Prep QC Batch: MP5887

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC3		
Lab Sample ID:	D27762-3	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8260B	**Percent Solids:**	71.7
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17633.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.18 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	87	38	ug/kg	
108-88-3	Toluene	ND	170	87	ug/kg	
100-41-4	Ethylbenzene	ND	170	44	ug/kg	
1330-20-7	Xylene (total)	ND	350	170	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	106%		61-130%
460-00-4	4-Bromofluorobenzene	105%		53-131%
17060-07-0	1,2-Dichloroethane-D4	117%		62-130%

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

Report of Analysis

Client Sample ID: NOBLE091911-WC3
Lab Sample ID: D27762-3
Matrix: SO - Soil
Method: SW846 8015B
Project: Noble

Date Sampled: 09/19/11
Date Received: 09/20/11
Percent Solids: 71.7

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13123.D	1	09/22/11	SK	n/a	n/a	GGB748
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	8.88	17	8.7	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	86%		60-140%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC3		
Lab Sample ID:	D27762-3	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846-8015B SW846 3546	**Percent Solids:**	71.7
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10214.D	1	09/23/11	KV	09/22/11	OP4519	GFD478
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	32.0	19	12	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	88%		61-142%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC3		
Lab Sample ID:	D27762-3	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	71.7
Project:	Noble		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	4.8	3.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Barium	789	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Cadmium	< 1.4	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Chromium	15.0	1.4	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Lead	8.9	6.8	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Mercury	< 0.13	0.13	mg/kg	1	09/29/11	09/29/11	JB	SW846 7471A [2]	SW846 7471A [4]
Selenium	< 6.8	6.8	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Silver	< 4.1	4.1	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA1857
(2) Instrument QC Batch: MA1859
(3) Prep QC Batch: MP5877
(4) Prep QC Batch: MP5887

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC4		
Lab Sample ID:	D27762-4	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8260B	**Percent Solids:**	75.5
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17634.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.08 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	81	36	ug/kg	
108-88-3	Toluene	ND	160	81	ug/kg	
100-41-4	Ethylbenzene	ND	160	41	ug/kg	
1330-20-7	Xylene (total)	ND	330	160	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	107%		61-130%
460-00-4	4-Bromofluorobenzene	106%		53-131%
17060-07-0	1,2-Dichloroethane-D4	119%		62-130%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC4		
Lab Sample ID:	D27762-4	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8015B	**Percent Solids:**	75.5
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13124.D	1	09/22/11	SK	n/a	n/a	GGB748
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	10.5	16	8.1	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	82%		60-140%

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

Report of Analysis

Client Sample ID: NOBLE091911-WC4
Lab Sample ID: D27762-4
Matrix: SO - Soil
Method: SW846-8015B SW846 3546
Project: Noble

Date Sampled: 09/19/11
Date Received: 09/20/11
Percent Solids: 75.5

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10215.D	1	09/23/11	KV	09/22/11	OP4519	GFD478
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	38.4	18	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	87%		61-142%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC4		
Lab Sample ID:	D27762-4	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	75.5
Project:	Noble		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	5.8	3.1	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Barium	526	1.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Cadmium	< 1.2	1.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Chromium	17.7	1.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Lead	13.2	6.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Mercury	< 0.12	0.12	mg/kg	1	09/29/11	09/29/11	JB	SW846 7471A [2]	SW846 7471A [4]
Selenium	< 6.2	6.2	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Silver	< 3.7	3.7	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA1857
(2) Instrument QC Batch: MA1859
(3) Prep QC Batch: MP5877
(4) Prep QC Batch: MP5887

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911-WC5		
Lab Sample ID:	D27762-5	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8260B	**Percent Solids:**	61.2
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17635.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.11 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	110	49	ug/kg	
108-88-3	Toluene	ND	220	110	ug/kg	
100-41-4	Ethylbenzene	ND	220	56	ug/kg	
1330-20-7	Xylene (total)	ND	450	220	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	106%		61-130%
460-00-4	4-Bromofluorobenzene	102%		53-131%
17060-07-0	1,2-Dichloroethane-D4	117%		62-130%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC5		
Lab Sample ID:	D27762-5	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846 8015B	**Percent Solids:**	61.2
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13125.D	1	09/22/11	SK	n/a	n/a	GGB748
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	22	11	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	81%		60-140%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC5		
Lab Sample ID:	D27762-5	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
Method:	SW846-8015B SW846 3546	**Percent Solids:**	61.2
Project:	Noble		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10216.D	1	09/23/11	KV	09/22/11	OP4519	GFD478
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	67.7	22	14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	73%		61-142%

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

Report of Analysis

Client Sample ID:	NOBLE091911-WC5		
Lab Sample ID:	D27762-5	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	61.2
Project:	Noble		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	5.6	3.9	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Barium	557	1.5	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Cadmium	< 1.5	1.5	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Chromium	19.4	1.5	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Lead	12.5	7.7	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Mercury	< 0.14	0.14	mg/kg	1	09/29/11	09/29/11	JB	SW846 7471A [2]	SW846 7471A [4]
Selenium	< 7.7	7.7	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]
Silver	< 4.6	4.6	mg/kg	1	09/28/11	09/28/11	JM	SW846 6010B [1]	SW846 3050B [3]

(1) Instrument QC Batch: MA1857
(2) Instrument QC Batch: MA1859
(3) Prep QC Batch: MP5877
(4) Prep QC Batch: MP5887

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911		
Lab Sample ID:	D27762-6	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	83.5
Project:	Noble		

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	105	2.0	mg/l	1	09/23/11	09/26/11	JB	SW846 6010B [1]	EPA 200.7 [2]
Magnesium	20.7	1.0	mg/l	1	09/23/11	09/26/11	JB	SW846 6010B [1]	EPA 200.7 [2]
Sodium	601	2.0	mg/l	1	09/23/11	09/26/11	JB	SW846 6010B [1]	EPA 200.7 [2]

(1) Instrument QC Batch: MA1851
(2) Prep QC Batch: MP5844

RL = Reporting Limit

Report of Analysis

Client Sample ID:	NOBLE091911		
Lab Sample ID:	D27762-6	**Date Sampled:**	09/19/11
Matrix:	SO - Soil	**Date Received:**	09/20/11
		Percent Solids:	83.5
Project:	Noble		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	14.0		ratio	1	09/26/11 15:45	JB	USDA HANDBOOK 60
Solids, Percent	83.5		%	1	09/20/11	SWT	SM19 2540B M
Specific Conductivity	3480	1.0	umhos/cm	1	09/26/11	JK	DEPT.OF AG, BOOK N9
pH	7.76		su	1	09/20/11 14:20	JD	SW846 9045C

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST LABORATORIES

Accutest Laboratories Mountain States
4036 Youngfield Stet Wheat Ridge, Co 80033
TEL. 303-425-021 877-737-4521
FAX 303-425-6021

PAGE ___ OF ___

FED-EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest Job # D27762

Client / Reporting Information

Company Name: ECOS Environmental
Street Address: 16690 Hwy 82
City: Gws State: CO Zip: 81601
Project Contact: Zullika Perez E-mail: zperez@ecosenvironmental.com
Phone #: 970-945-4407 Fax #: 970-945-4408
Sampler(s) Name(s): Z. Perez Phone #: —

Project Information

Project Name: Noble091911
Street:
City:
Project#:
Client PO#:
Project Manager:

Billing Information (If different from Report to)

Company Name: SAA
Street Address:
City State Zip:
Attention: J. REICHERT PO#:

Requested Analysis (see TEST CODE sheet)

PAH | BTEX (Gro/DRO Email) | BRCRA Metals | pH | Specific Conductivity | SAR

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL- Sludge
SED-Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB- Equipment Blank
RB- Rinse Blank
TB-Trip Blank

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	MeOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	PAH	BTEX (Gro/DRO Email)	BRCRA Metals	pH	Specific Conductivity	SAR	LAB USE ONLY
	Noble091911-WC1		9-19-11	12:40	ZP	S	1											X					01
	Noble091911-WC2		9-19-11	12:48	ZP	S	1											X					02
	Noble091911-WC3		9-19-11	12:56	ZP	S	1											X					03
	Noble091911-WC4		9-19-11	13:00	ZP	S	1											X					04
	Noble091911-WC5		9-19-11	13:10	ZP	S	1											X					05
	Noble091911		9-19-11	—			1													X	X	X	06

Turnaround Time (Business days)

- [ ] Std. 10 Business Days
- [X] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Approved By (Accutest PM): / Date:

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] Commercial "B" +Narrative
- [ ] FULLT1 (Level 3+4)
- [ ] State Forms
- [ ] EDD Format
- [ ] PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Gro/Dro on 1-5 per email-p

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

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Zullika Perez	9-19-11/16:00	1	2		2 9-20-11
3			3	4		4
5			5			

Custody Seal # | [X] Intact [ ] Not Intact | Preserved where applicable [ ] NA | On Ice [X] | Cooler Temp: 4.0

D27762: Chain of Custody
Page 1 of 3

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D27762 **Client:** ECOS **Immediate Client Services Action Required:** No

Date / Time Received: 9/20/2011 7:25:00 AM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: NOBLE **Airbill #'s:** FEDEX

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	Infared gun		
3. Cooler media:	Ice (bag)		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	
2. Trip Blank listed on COC:	☐		☐	
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume rec'd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www/accutest.com

D27762: Chain of Custody
Page 2 of 3

Job Change Order: D27762_9/27/2011

Requested	9/27/2011	**Received Date:**	9/20/2011
Account Name:	Ecos Environmental	**Due Date:**	9/27/2011
Project	Noble	**Deliverable:**	COMMBN
CSR:	RR	**TAT (Days):**	3

Sample #:
D27762-1, 2, 3, 4, 5

Change: Please log and run for HM8 as the client needed it but did not mark it on the original COC. Thank you.

Above Changes Per: Client - Zuleika Pevec **Date:** 9/27/2011

To Client: This Change Order is confirmation of the revisions, previously discussed with the Accutest Client Service Representative.

D27762: Chain of Custody
Page 3 of 3

Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1048-MB	5V17625.D	1	09/23/11	DC	n/a	n/a	V5V1048

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

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	105%	61-130%
460-00-4	4-Bromofluorobenzene	92%	53-131%
17060-07-0	1,2-Dichloroethane-D4	113%	62-130%

Blank Spike Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1048-BS	5V17626.D	1	09/23/11	DC	n/a	n/a	V5V1048

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

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.8	102	70-130
100-41-4	Ethylbenzene	50	48.4	97	70-130
108-88-3	Toluene	50	50.0	100	70-130
1330-20-7	Xylene (total)	150	150	100	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	108%	61-130%
460-00-4	4-Bromofluorobenzene	106%	53-131%
17060-07-0	1,2-Dichloroethane-D4	114%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D27929-1MS	5V17629.D	1	09/23/11	DC	n/a	n/a	V5V1048
D27929-1MSD	5V17630.D	1	09/23/11	DC	n/a	n/a	V5V1048
D27929-1	5V17628.D	1	09/23/11	DC	n/a	n/a	V5V1048

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

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	D27929-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3080	3070	100	3150	102	3	70-134/30
100-41-4	Ethylbenzene	ND		3080	2950	96	3000	97	2	70-137/30
108-88-3	Toluene	ND		3080	2950	96	3000	97	2	70-130/30
1330-20-7	Xylene (total)	ND		9240	9280	100	9390	102	1	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D27929-1	Limits
2037-26-5	Toluene-D8	107%	106%	107%	61-130%
460-00-4	4-Bromofluorobenzene	117%	115%	104%	53-131%
17060-07-0	1,2-Dichloroethane-D4	113%	114%	115%	62-130%

Mountain States ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB747-MB	GB13099.D	1	09/21/11	SK	n/a	n/a	GGB747

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
120-82-1	1,2,4-Trichlorobenzene	82%	60-140%

Method Blank Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB748-MB	GB13117.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
120-82-1	1,2,4-Trichlorobenzene	86%	60-140%

Blank Spike Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB747-BS	GB13100.D	1	09/21/11	SK	n/a	n/a	GGB747

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	121	110	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	91%	60-140%

Blank Spike Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB748-BS	GB13118.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	119	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	98%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D27795-1MS	GB13103.D	1	09/21/11	SK	n/a	n/a	GGB747
D27795-1MSD	GB13104.D	1	09/21/11	SK	n/a	n/a	GGB747
D27795-1	GB13102.D	1	09/21/11	SK	n/a	n/a	GGB747

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-1

CAS No.	Compound	D27795-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	9.18	J	143	158	104	160	105	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D27795-1	Limits
120-82-1	1,2,4-Trichlorobenzene	85%	93%	86%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D27762-2MS	GB13120.D	1	09/22/11	SK	n/a	n/a	GGB748
D27762-2MSD	GB13121.D	1	09/22/11	SK	n/a	n/a	GGB748
D27762-2	GB13119.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples: **Method:** SW846 8015B

D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	D27762-2 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		354	388	110	396	112	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D27762-2	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	95%	78%	60-140%

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-MB	FD10185.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples: **Method:** SW846-8015B

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	86%	61-142%

Blank Spike Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-BS	FD10186.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples: **Method:** SW846-8015B

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	548	82	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	91%	61-142%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D27762
Account: ECOECOA Ecos Environmental
Project: Noble

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-MS	FD10187.D	1	09/22/11	KV	09/22/11	OP4519	GFD475
OP4519-MSD	FD10188.D	1	09/22/11	KV	09/22/11	OP4519	GFD475
D27796-8	FD10189.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples: **Method:** SW846-8015B

D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

CAS No.	Compound	D27796-8 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		710	548	77	546	77	0	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D27796-8	Limits
84-15-1	o-Terphenyl	82%	86%	88%	61-142%

7.3.1

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Mountain States ACCUTEST LABORATORIES

Metals Analysis

QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/23/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	20.0	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	11.5	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	-55	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP5844: D27762-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/23/11

Metal	D27613-1RA Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	20300	156000	125000	108.6	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	552	130000	125000	103.6	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	754000	870000	125000	92.8	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP5844: D27762-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/23/11

Metal	D27613-1RA Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	20300	156000	125000	108.6	0.0	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	552	130000	125000	103.6	0.0	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	754000	895000	125000	112.8	2.8	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP5844: D27762-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date: 09/23/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	138000	125000	110.4	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	129000	125000	103.2	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	130000	125000	104.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP5844: D27762-6

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5844
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/28/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59	-0.13	<2.5
Barium	1.0	.11	.11	0.11	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	-0.010	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	0.050	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16		
Iron	7.0	.34	2		
Lead	5.0	.16	.21	0.060	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099		
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	-0.25	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.040	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06		

Associated samples MP5877: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/28/11

Metal	D28038-1 Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	2.4	112	129	84.8	75-125
Barium	122	118	25.9	-15.4(a)	75-125
Beryllium					
Boron					
Cadmium	0.55	54.1	64.6	82.9	75-125
Calcium					
Chromium	5.7	59.4	64.6	83.1	75-125
Cobalt					
Copper	anr				
Iron					
Lead	20.1	129	129	84.3	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	0.0	109	129	84.3	75-125
Silicon					
Silver	0.31	23.4	25.9	89.3	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP5877: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877 Methods: SW846 6010B
Matrix Type: SOLID Units: mg/kg

Prep Date: 09/28/11

Metal	D28038-1 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	2.4	111	127	85.7	0.9	20
Barium	122	144	25.3	87.0N(a)	16.5	20
Beryllium						
Boron						
Cadmium	0.55	53.5	63.4	83.6	1.1	20
Calcium						
Chromium	5.7	60.8	63.4	86.9	2.3	20
Cobalt						
Copper	anr					
Iron						
Lead	20.1	127	127	84.3	1.6	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium						
Selenium	0.0	108	127	85.2	0.9	20
Silicon						
Silver	0.31	23.2	25.3	90.3	0.9	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP5877: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877 Methods: SW846 6010B
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested
(a) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 09/28/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	88.3	100	88.3	80-120
Barium	18.2	20	91.0	80-120
Beryllium				
Boron				
Cadmium	42.8	50	85.6	80-120
Calcium				
Chromium	43.5	50	87.0	80-120
Cobalt				
Copper	anr			
Iron				
Lead	89.0	100	89.0	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	86.6	100	86.6	80-120
Silicon				
Silver	18.3	20	91.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP5877: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 09/28/11

Metal	D28038-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	18.6	58.5	214.5(a)	0-10
Barium	933	999	7.0	0-10
Beryllium				
Boron				
Cadmium	4.20	0.00	100.0(a)	0-10
Calcium				
Chromium	43.6	45.5	4.4	0-10
Cobalt				
Copper	anr			
Iron				
Lead	154	154	0.1	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	0.00	23.5		0-10
Silicon				
Silver	2.40	5.00	108.3(a)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP5877: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5877
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5887 Methods: SW846 7471A
Matrix Type: SOLID Units: mg/kg

Prep Date: 09/29/11

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.013	-0.0025	<0.10

Associated samples MP5887: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5887
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 09/29/11

Metal	D27762-1 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.015	0.43	0.516	80.4N(a)	85-115

Associated samples MP5887: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5887 Methods: SW846 7471A
Matrix Type: SOLID Units: mg/kg

Prep Date: 09/29/11

Metal	D27762-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.015	0.50	0.582	83.3N(a)	15.1	20

Associated samples MP5887: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

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

8.3.2
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SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

QC Batch ID: MP5887
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 09/29/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.37	0.4	92.5	80-120

Associated samples MP5887: D27762-1, D27762-2, D27762-3, D27762-4, D27762-5

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

Mountain States ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D27762
Account: ECOECOA - Ecos Environmental
Project: Noble

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP5539/GN11727	1.0	<1.0	umhos/cm	9980	9850	98.7	90-110%
pH	GN11645			su	8.00	7.96	99.5	99.3-100.7%

Associated Samples:
Batch GN11645: D27762-6
Batch GP5539: D27762-6
(*) Outside of QC limits