

Technical Report for**Absaroka Solutions****SDE_Vaneta_DAF_Permitting****FID:447590 Reg:COGCC 908 FREQ.:IN****SGS Job Number: DA13527****Sampling Date: 02/12/19****Report to:**

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Total number of pages in report: 12

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

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Laboratory Director

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Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942)
UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Test results relate only to samples analyzed.

Sample Summary

Absaroka Solutions

Job No: DA13527

SDE_Vaneta_DAF_Permitting
Project No: FID:447590 Reg:COGCC 908 FREQ.:IN

Sample Number	Collected		Time By	Matrix		Client Sample ID
	Date			Received	Code Type	
DA13527-1	02/12/19	11:00	JM	02/13/19	AQ Water	SDE_V_PW_01 LOT4_18_7N_80W
DA13527-1F	02/12/19	11:00	JM	02/13/19	AQ Water Filtered	SDE_V_PW_01 LOT4_18_7N_80W

Report of Analysis

Client Sample ID:	SDE_V_PW_01 LOT4_18_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13527-1	Date Received:	02/13/19
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	SDE_Vaneta_DAF_Permitting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V58747.D	1	02/15/19 18:39	CH	n/a	n/a	V7V2999
Run #2	7V58781.D	50	02/19/19 16:32	CH	n/a	n/a	V7V3000

Run #	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2270 ^a	50	25	ug/l	
108-88-3	Toluene	1750 ^a	50	25	ug/l	
100-41-4	Ethylbenzene	192	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	831 ^a	50	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	104%	102%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	101%	70-130%
2037-26-5	Toluene-D8	129%	101%	70-130%
460-00-4	4-Bromofluorobenzene	104%	99%	70-130%

(a) Result is from Run# 2

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:	SDE_V_PW_01 LOT4_18_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13527-1	Date Received:	02/13/19
Matrix:	AQ - Water	Percent Solids:	n/a
Method:	SW846 8270C SW846 3510C		
Project:	SDE_Vaneta_DAF_Permitting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1G141268.D	20	02/18/19 20:53	DC	02/18/19	OP17472	E1G2402
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2		

ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	800	400	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	80	34	ug/l	
95-57-8	2-Chlorophenol	ND	80	40	ug/l	
120-83-2	2,4-Dichlorophenol	ND	80	40	ug/l	
105-67-9	2,4-Dimethylphenol	ND	200	96	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	200	160	ug/l	
51-28-5	2,4-Dinitrophenol	ND	800	330	ug/l	
95-48-7	2-Methylphenol	159	80	36	ug/l	
106-44-5	4-Methylphenol	193	80	30	ug/l	
88-75-5	2-Nitrophenol	ND	80	40	ug/l	
100-02-7	4-Nitrophenol	ND	200	160	ug/l	
87-86-5	Pentachlorophenol	ND	200	160	ug/l	
108-95-2	Phenol	190	80	20	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	80	28	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	80	40	ug/l	
83-32-9	Acenaphthene	ND	80	28	ug/l	
208-96-8	Acenaphthylene	ND	80	24	ug/l	
62-53-3	Aniline	ND	200	160	ug/l	
120-12-7	Anthracene	ND	80	28	ug/l	
92-87-5	Benzidine	ND	4000	3000	ug/l	
56-55-3	Benzo(a)anthracene	ND	80	28	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	80	36	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	80	36	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	80	40	ug/l	
50-32-8	Benzo(a)pyrene	ND	80	40	ug/l	
100-51-6	Benzyl Alcohol	ND	80	36	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	80	28	ug/l	
85-68-7	Butyl benzyl phthalate	ND	80	52	ug/l	
86-74-8	Carbazole	ND	80	32	ug/l	
106-47-8	4-Chloroaniline	ND	80	32	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	80	28	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	80	28	ug/l	

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: SDE_V_PW_01 LOT4_18_7N_80W
 Lab Sample ID: DA13527-1
 Matrix: AQ - Water
 Method: SW846 8270C SW846 3510C
 Project: SDE_Vaneta_DAF_Permitting

Date Sampled: 02/12/19
 Date Received: 02/13/19
 Percent Solids: n/a

ABN Full List

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	40	ug/l	
91-58-7	2-Chloronaphthalene	ND	80	28	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	28	ug/l	
218-01-9	Chrysene	ND	80	28	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	80	52	ug/l	
132-64-9	Dibenzofuran	ND	80	28	ug/l	
84-74-2	Di-n-butyl phthalate	ND	80	48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	80	32	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	80	32	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	80	36	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	200	160	ug/l	
84-66-2	Diethyl phthalate	ND	80	32	ug/l	
131-11-3	Dimethyl phthalate	ND	80	28	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	80	32	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	80	32	ug/l	
117-84-0	Di-n-octyl phthalate	ND	80	32	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	80	28	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	80	28	ug/l	
206-44-0	Fluoranthene	ND	80	36	ug/l	
86-73-7	Fluorene	ND	80	24	ug/l	
118-74-1	Hexachlorobenzene	ND	80	28	ug/l	
87-68-3	Hexachlorobutadiene	ND	80	36	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	200	160	ug/l	
67-72-1	Hexachloroethane	ND	80	36	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	80	56	ug/l	
78-59-1	Isophorone	ND	80	28	ug/l	
90-12-0	1-Methylnaphthalene	143	80	28	ug/l	
91-57-6	2-Methylnaphthalene	138	80	28	ug/l	
91-20-3	Naphthalene	117	80	32	ug/l	
88-74-4	2-Nitroaniline	ND	80	36	ug/l	
99-09-2	3-Nitroaniline	ND	200	160	ug/l	
100-01-6	4-Nitroaniline	ND	80	36	ug/l	
98-95-3	Nitrobenzene	ND	80	32	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	200	160	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	80	28	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	28	ug/l	
85-01-8	Phenanthrene	27.0	80	24	ug/l	J
129-00-0	Pyrene	ND	80	28	ug/l	
110-86-1	Pyridine	ND	200	160	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	80	32	ug/l	

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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: SDE_V_PW_01 LOT4_18_7N_80W
Lab Sample ID: DA13527-1
Matrix: AQ - Water
Method: SW846 8270C SW846 3510C
Project: SDE_Vaneta_DAF_Permitting

Date Sampled: 02/12/19
Date Received: 02/13/19
Percent Solids: n/a

ABN Full List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	45%		10-130%
4165-62-2	Phenol-d5	34%		10-130%
118-79-6	2,4,6-Tribromophenol	84%		10-135%
4165-60-0	Nitrobenzene-d5	126%		19-130%
321-60-8	2-Fluorobiphenyl	88%		20-130%
1718-51-0	Terphenyl-d14	91%		13-149%

(a) Elevated reporting limits due to sample matrix, dilution required during sample prep and analysis.

ND = Not detected MDL = Method Detection Limit
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J = Indicates an estimated value
 B = Indicates analyte found in associated method blank
 N = Indicates presumptive evidence of a compound

Report of Analysis

Page 1 of 1

Client Sample ID: SDE_V_PW_01 LOT4_18_7N_80W

Lab Sample ID: DA13527-1

Date Sampled: 02/12/19

Matrix: AQ - Water

Date Received: 02/13/19

Method: SW846 8015B

Percent Solids: n/a

Project: SDE_Vaneta_DAF_Permitting

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB49083.D	1	02/15/19 18:12	BB	n/a	n/a	GGB2310
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	11.9	0.050	0.050	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	130%		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: SDE_V_PW_01 LOT4_18_7N_80W

Lab Sample ID: DA13527-1

Date Sampled: 02/12/19

Matrix: AQ - Water

Date Received: 02/13/19

Method: SW846-8015B SW846 3510C

Percent Solids: n/a

Project: SDE_Vaneta_DAF_Permitting

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FC62600.D	5	02/18/19 16:34	RB	02/15/19	OP17465	GFC2562
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	57.5	0.95	0.86	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	87%		11-142%		

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: SDE_V_PW_01 LOT4_18_7N_80W

Lab Sample ID: DA13527-1

Matrix: AQ - Water

Date Sampled: 02/12/19

Date Received: 02/13/19

Percent Solids: n/a

Project: SDE_Vaneta_DAF_Permitting

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic ^a	< 0.13	0.13	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Boron ^a	41.9	0.25	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Calcium	210	0.40	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Iron	7.96	0.010	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Magnesium	17.5	0.20	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Manganese ^a	0.317	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Potassium	56.0	1.0	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Sodium ^a	7850	4.0	mg/l	10	02/14/19	02/19/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Strontium ^a	22.5	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴

(1) Instrument QC Batch: MA11040

(2) Instrument QC Batch: MA11043

(3) Instrument QC Batch: MA11053

(4) Prep QC Batch: MP27343

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SDE_V_PW_01 LOT4_18_7N_80W

Lab Sample ID: DA13527-1

Matrix: AQ - Water

Date Sampled: 02/12/19

Date Received: 02/13/19

Percent Solids: n/a

Project: SDE_Vaneta_DAF_Permitting

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	1540	5.0	mg/l	1	02/18/19	JD	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	02/18/19	JD	SM 2320B-2011
Alkalinity, Total as CaCO ₃	1540	5.0	mg/l	1	02/18/19	JD	SM 2320B-2011
Bromide	116	25	mg/l	500	02/14/19 14:32	MA	EPA300.0/SW846 9056A
Cation Anion Balance ^a	8.6 *		%	1	02/19/19	KM	SM1030E-2011
Chloride	10800	1300	mg/l	2500	02/13/19 16:27	JB	EPA300.0/SW846 9056A
Fluoride ^b	< 50	50	mg/l	500	02/14/19 14:32	MA	EPA300.0/SW846 9056A
HEM Oil and Grease	41.8	4.7	mg/l	1	02/19/19	ST	EPA 1664A
Nitrogen, Nitrate ^b	< 0.25	0.25	mg/l	25	02/13/19 15:59	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite ^c	< 10	10	mg/l	1	02/13/19 16:27	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^b	< 10	10	mg/l	2500	02/13/19 16:27	JB	EPA300.0/SW846 9056A
Solids, Total Dissolved ^d	19600	10	mg/l	1	02/18/19	SK	SM 2540C-2011
Specific Conductivity	27200	1.0	umhos/cm	1	02/15/19 09:30	PV	SM 2510B-2011
Sulfate ^b	< 13	13	mg/l	25	02/13/19 15:59	JB	EPA300.0/SW846 9056A
pH ^e	7.77		su	1	02/15/19	PV	SM4500HB+ -2011/9040C

(a) Poor balance due to possible matrix interference.

(b) Elevated detection limit due to matrix interference.

(c) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

(d) Maximum reference method residue requirement was exceeded. The constant weight requirement was met.

(e) Analysis performed past recommended hold time.

RL = Reporting Limit

Report of Analysis

Client Sample ID: SDE_V_PW_01 LOT4_18_7N_80W

Lab Sample ID: DA13527-1F

Matrix: AQ - Water Filtered

Date Sampled: 02/12/19

Date Received: 02/13/19

Percent Solids: n/a

Project: SDE_Vaneta_DAF_Permitting

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic ^a	< 0.13	0.13	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Boron ^a	39.2	0.25	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Calcium	210	0.40	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Iron	7.65	0.010	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Magnesium	17.5	0.20	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Manganese ^a	0.287	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴
Potassium	55.6	1.0	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Sodium ^a	8850	8.0	mg/l	20	02/14/19	02/19/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Strontium ^a	20.6	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁴

(1) Instrument QC Batch: MA11040

(2) Instrument QC Batch: MA11043

(3) Instrument QC Batch: MA11053

(4) Prep QC Batch: MP27343

(a) Elevated detection limit due to dilution required for possible matrix interference.