



Wheat Ridge, CO

02/25/19

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Automated Report

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: 65



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.

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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	Received	Matrix		Client Sample ID
	Date				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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: Absaroka Solutions

Job No DA13527

Site: SDE_Vaneta_DAF_Permitting

Report Date 2/25/2019 2:43:55 PM

On 02/13/2019, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.9 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA13527 was assigned to the project. The lab sample ID, client sample ID, 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.

MS Volatiles By Method SW846 8260B

Matrix: AQ

Batch ID: V7V2999

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12301-31MS, DA12301-31MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ

Batch ID: V7V3000

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12300-9MS, DA12300-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

MS Semi-volatiles By Method SW846 8270C

Matrix: AQ

Batch ID: OP17472

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA12300-7MS, DA12300-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Benzidine, Benzoic Acid are outside control limits. Outside control limits due to possible matrix interference.
- The RPD(s) for the MS and MSD recoveries of 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2,2'-Oxybis(1-chloropropane), 2-Methylphenol, Hexachlorobutadiene, Hexachlorocyclopentadiene, Hexachloroethane, N-Nitrosodimethylamine are outside control limits for sample OP17472-MSD. Variability of recovery may be due to sample matrix/nonhomogeneity.
- DA13527-1: Elevated reporting limits due to sample matrix, dilution required during sample prep and analysis.

GC Volatiles By Method SW846 8015B

Matrix: AQ

Batch ID: GGB2310

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12301-22MS, DA12301-22MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846-8015B

Matrix: AQ

Batch ID: OP17465

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA12300-2MS, DA12300-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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Metals Analysis By Method EPA 200.7

Matrix: AQ

Batch ID: MP27343

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13438-1MS, DA13438-1MSD were used as the QC samples for the metals analysis.
- DA13527-1 for Arsenic, Boron, Manganese, Sodium, Strontium: Elevated detection limit due to dilution required for possible matrix interference.
- DA13527-1F for Arsenic, Boron, Manganese, Sodium, Strontium: Elevated detection limit due to dilution required for possible matrix interference.

Metals Analysis By Method EPA 200.8

Matrix: AQ

Batch ID: MP27351

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13472-1MSD, DA13472-1MS, DA13472-1MSD were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Barium are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- DA13527-1F for Selenium: Elevated detection limit due to dilution required for possible matrix interference.
- DA13527-1 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.

General Chemistry By Method EPA 1664A

Matrix: AQ

Batch ID: GP24592

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13527-1MS were used as the QC samples for the HEM Oil and Grease analysis.

General Chemistry By Method EPA 300.0/SW846 9056

Matrix: AQ

Batch ID: R46663

- The data for EPA 300.0/SW846 9056 meets quality control requirements.
- DA13527-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

General Chemistry By Method EPA300.0/SW846 9056A

Matrix: AQ

Batch ID: GP24579

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13495-1MS, DA13495-1MSD were used as the QC samples for the Chloride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Chloride analysis.
- DA13527-1 for Sulfate; Nitrogen, Nitrate and Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

Matrix: AQ

Batch ID: GP24584

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13531-3MS, DA13531-3MSD were used as the QC samples for the Bromide, Fluoride, Bromide analysis.
- DA13527-1 for Fluoride: Elevated detection limit due to matrix interference.

General Chemistry By Method SM 2320B-2011

Matrix: AQ

Batch ID: GN46122

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13527-1DUP were used as the QC samples for the Alkalinity, Total as CaCO₃ analysis.

Matrix: AQ

Batch ID: GN46123

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

Matrix: AQ

Batch ID: GN46124

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

General Chemistry By Method SM 2510B-2011

Matrix: AQ

Batch ID: GP24586

- Sample(s) DA13483-1DUP were used as the QC samples for the Specific Conductivity analysis.

General Chemistry By Method SM 2540C-2011

Matrix: AQ

Batch ID: GN46118

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13605-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.
- DA13527-1 for Solids, Total Dissolved: Maximum reference method residue requirement was exceeded. The constant weight requirement was met.

General Chemistry By Method SM1030E-2011

Matrix: AQ

Batch ID: GN46137

- The data for SM1030E-2011 meets quality control requirements.
- DA13527-1 for Cation Anion Balance: Poor balance due to possible matrix interference.

General Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ

Batch ID: GN46109

- Sample(s) DA13483-1DUP were used as the QC samples for the pH analysis.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA13527-1 Analysis performed past recommended hold time.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS'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.

SGS 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 SGS indicated via signature on the report cover.

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Summary of Hits

Job Number: DA13527
Account: Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting
Collected: 02/12/19

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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DA13527-1 SDE_V_PW_01 LOT4_18_7N_80W

Benzene	2270	50	25	ug/l	SW846 8260B
Toluene	1750	50	25	ug/l	SW846 8260B
Ethylbenzene	192	1.0	0.50	ug/l	SW846 8260B
Xylene (total)	831	50	50	ug/l	SW846 8260B
2-Methylphenol ^a	159	80	36	ug/l	SW846 8270C
4-Methylphenol ^a	193	80	30	ug/l	SW846 8270C
Phenol ^a	190	80	20	ug/l	SW846 8270C
1-Methylnaphthalene ^a	143	80	28	ug/l	SW846 8270C
2-Methylnaphthalene ^a	138	80	28	ug/l	SW846 8270C
Naphthalene ^a	117	80	32	ug/l	SW846 8270C
Phenanthrene ^a	27.0 J	80	24	ug/l	SW846 8270C
TPH-GRO (C6-C10)	11.9	0.050	0.050	mg/l	SW846 8015B
TPH-DRO (C10-C28)	57.5	0.95	0.86	mg/l	SW846-8015B
Barium	30.5	0.10		mg/l	EPA 200.8
Boron ^b	41.9	0.25		mg/l	EPA 200.7
Calcium	210	0.40		mg/l	EPA 200.7
Iron	7.96	0.010		mg/l	EPA 200.7
Magnesium	17.5	0.20		mg/l	EPA 200.7
Manganese ^b	0.317	0.025		mg/l	EPA 200.7
Potassium	56.0	1.0		mg/l	EPA 200.7
Sodium ^b	7850	4.0		mg/l	EPA 200.7
Strontium ^b	22.5	0.025		mg/l	EPA 200.7
Alkalinity, Bicarbonate as CaCO ₃	1540	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO ₃	1540	5.0		mg/l	SM 2320B-2011
Bromide	116	25		mg/l	EPA300.0/SW846 9056A
Cation Anion Balance ^c	8.6 *			%	SM1030E-2011
Chloride	10800	1300		mg/l	EPA300.0/SW846 9056A
HEM Oil and Grease	41.8	4.7		mg/l	EPA 1664A
Solids, Total Dissolved ^d	19600	10		mg/l	SM 2540C-2011
Specific Conductivity	27200	1.0		umhos/cm	SM 2510B-2011
pH ^e	7.77			su	SM4500HB+ -2011/9040C

DA13527-1F SDE_V_PW_01 LOT4_18_7N_80W

Barium	27.6	0.10		mg/l	EPA 200.8
Boron ^b	39.2	0.25		mg/l	EPA 200.7
Calcium	210	0.40		mg/l	EPA 200.7
Iron	7.65	0.010		mg/l	EPA 200.7
Magnesium	17.5	0.20		mg/l	EPA 200.7
Manganese ^b	0.287	0.025		mg/l	EPA 200.7
Potassium	55.6	1.0		mg/l	EPA 200.7
Sodium ^b	8850	8.0		mg/l	EPA 200.7
Strontium ^b	20.6	0.025		mg/l	EPA 200.7

Summary of Hits

Job Number: DA13527
Account: Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting
Collected: 02/12/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

- (a) Elevated reporting limits due to sample matrix, dilution required during sample prep and analysis.
- (b) Elevated detection limit due to dilution required for possible matrix interference.
- (c) Poor balance due to possible matrix interference.
- (d) Maximum reference method residue requirement was exceeded. The constant weight requirement was met.
- (e) Analysis performed past recommended hold time.

Sample Results

Report of Analysis

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		

	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

	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		

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

	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	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		

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	

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		

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 J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range 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 8015B		
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

J = Indicates an estimated value

RL = Reporting Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

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:	SW846-8015B SW846 3510C		
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 J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.1
4

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	Analized 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 ⁵
Barium	30.5	0.10	mg/l	50	02/14/19	02/25/19 EP	EPA 200.8 ⁴	EPA 200.8 ⁶
Boron ^a	41.9	0.25	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵
Calcium	210	0.40	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Iron	7.96	0.010	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Magnesium	17.5	0.20	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Manganese ^a	0.317	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵
Potassium	56.0	1.0	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Selenium ^a	< 0.020	0.020	mg/l	50	02/14/19	02/25/19 EP	EPA 200.8 ⁴	EPA 200.8 ⁶
Sodium ^a	7850	4.0	mg/l	10	02/14/19	02/19/19 JR	EPA 200.7 ³	EPA 200.7 ⁵
Strontium ^a	22.5	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵

(1) Instrument QC Batch: MA11040

(2) Instrument QC Batch: MA11043

(3) Instrument QC Batch: MA11053

(4) Instrument QC Batch: MA11063

(5) Prep QC Batch: MP27343

(6) Prep QC Batch: MP27351

(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**Project:** SDE_Vaneta_DAF_Permitting**Date Sampled:** 02/12/19**Date Received:** 02/13/19**Percent Solids:** n/a

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	Date Sampled:	02/12/19
Lab Sample ID:	DA13527-1F	Date Received:	02/13/19
Matrix:	AQ - Water Filtered	Percent Solids:	n/a
Project:	SDE_Vaneta_DAF_Permitting		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized 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 ⁵
Barium	27.6	0.10	mg/l	50	02/14/19	02/25/19 EP	EPA 200.8 ⁴	EPA 200.8 ⁶
Boron ^a	39.2	0.25	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵
Calcium	210	0.40	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Iron	7.65	0.010	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Magnesium	17.5	0.20	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Manganese ^a	0.287	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵
Potassium	55.6	1.0	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 ¹	EPA 200.7 ⁵
Selenium ^a	< 0.020	0.020	mg/l	50	02/14/19	02/25/19 EP	EPA 200.8 ⁴	EPA 200.8 ⁶
Sodium ^a	8850	8.0	mg/l	20	02/14/19	02/19/19 JR	EPA 200.7 ³	EPA 200.7 ⁵
Strontium ^a	20.6	0.025	mg/l	5	02/14/19	02/15/19 JR	EPA 200.7 ²	EPA 200.7 ⁵

- (1) Instrument QC Batch: MA11040
 - (2) Instrument QC Batch: MA11043
 - (3) Instrument QC Batch: MA11053
 - (4) Instrument QC Batch: MA11063
 - (5) Prep QC Batch: MP27343
 - (6) Prep QC Batch: MP27351
- (a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

Bottle Order Control #

FED-EX Tracking #

SGS Quote #

SGS Job #	DA 13527
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[illegible]

DA13527: Chain of Custody

Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: DA13527

Client: ABSAROKA

Project: SDE

Date / Time Received: 2/13/2019 2:45:00 PM

Delivery Method:

Airbill #'s: CO

Cooler Temps (Initial/Adjusted): #1: (0.9/0.9):

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun; | |
| 3. Cooler media: | Ice (Bag) | |
| 4. No. Coolers: | 1 | |

Quality Control Preservation

Y or N N/A

- | | | | |
|---------------------------------|-------------------------------------|--------------------------|--------------------------|
| 1. Trip Blank present / cooler: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

DA13527: Chain of Custody

Page 2 of 2

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: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2999-MB	7V58737.D	1	02/15/19	CH	n/a	n/a	V7V2999

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

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 70-130%
17060-07-0	1,2-Dichloroethane-D4	100% 70-130%
2037-26-5	Toluene-D8	101% 70-130%
460-00-4	4-Bromofluorobenzene	104% 70-130%

Method Blank Summary

Page 1 of 1

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3000-MB	7V58776.D	1	02/19/19	CH	n/a	n/a	V7V3000

The QC reported here applies to the following samples:

Method: SW846 8260B

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	103% 70-130%
17060-07-0	1,2-Dichloroethane-D4	102% 70-130%
2037-26-5	Toluene-D8	99% 70-130%
460-00-4	4-Bromofluorobenzene	100% 70-130%

Blank Spike Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2999-BS	7V58735.D	1	02/15/19	CH	n/a	n/a	V7V2999

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

DA13527-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
100-41-4	Ethylbenzene	50	52.4	105	69-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3000-BS	7V58777.D	1	02/19/19	CH	n/a	n/a	V7V3000

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

DA13527-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	53.4	107	70-130
108-88-3	Toluene	50	53.0	106	70-130
1330-20-7	Xylene (total)	150	158	105	70-130

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

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-31MS	7V58738.D	1	02/15/19	CH	n/a	n/a	V7V2999
DA12301-31MSD	7V58739.D	1	02/15/19	CH	n/a	n/a	V7V2999
DA12301-31	7V58740.D	1	02/15/19	CH	n/a	n/a	V7V2999

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

DA13527-1

CAS No.	Compound	DA12301-31		MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
		ug/l	Q ug/l							
100-41-4	Ethylbenzene	ND	50	51.8	104	50	53.3	107	3	69-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-31	Limits
1868-53-7	Dibromofluoromethane	105%	105%	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	101%	100%	70-130%
2037-26-5	Toluene-D8	102%	100%	99%	70-130%
460-00-4	4-Bromofluorobenzene	102%	101%	97%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12300-9MS	7V58778.D	1	02/19/19	CH	n/a	n/a	V7V3000
DA12300-9MSD	7V58779.D	1	02/19/19	CH	n/a	n/a	V7V3000
DA12300-9	7V58780.D	1	02/19/19	CH	n/a	n/a	V7V3000

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

DA13527-1

CAS No.	Compound	DA12300-9 ug/l	Spike Q ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	50	51.7	103	50	51.1	102	1	67-130/30
108-88-3	Toluene	ND	50	52.0	104	50	51.1	102	2	70-130/30
1330-20-7	Xylene (total)	ND	150	155	103	150	152	101	2	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12300-9	Limits
1868-53-7	Dibromofluoromethane	102%	104%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	101%	101%	100%	70-130%
2037-26-5	Toluene-D8	99%	99%	102%	70-130%
460-00-4	4-Bromofluorobenzene	101%	99%	100%	70-130%

* = Outside of Control Limits.

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MB	1G141259.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	10	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	2.0	0.84	ug/l	
95-57-8	2-Chlorophenol	ND	2.0	1.0	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	1.0	ug/l	
105-67-9	2,4-Dimethylphenol	ND	5.0	2.4	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	5.0	4.0	ug/l	
51-28-5	2,4-Dinitrophenol	ND	20	8.2	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.90	ug/l	
106-44-5	4-Methylphenol	ND	2.0	0.75	ug/l	
88-75-5	2-Nitrophenol	ND	2.0	1.0	ug/l	
100-02-7	4-Nitrophenol	ND	5.0	4.0	ug/l	
87-86-5	Pentachlorophenol	ND	5.0	4.0	ug/l	
108-95-2	Phenol	ND	2.0	0.50	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	2.0	0.70	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	1.0	ug/l	
83-32-9	Acenaphthene	ND	2.0	0.70	ug/l	
208-96-8	Acenaphthylene	ND	2.0	0.60	ug/l	
62-53-3	Aniline	ND	5.0	4.0	ug/l	
120-12-7	Anthracene	ND	2.0	0.70	ug/l	
92-87-5	Benzidine	ND	100	75	ug/l	
56-55-3	Benzo(a)anthracene	ND	2.0	0.70	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	2.0	0.90	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	2.0	0.90	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	2.0	1.0	ug/l	
50-32-8	Benzo(a)pyrene	ND	2.0	1.0	ug/l	
100-51-6	Benzyl Alcohol	ND	2.0	0.90	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.70	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	1.3	ug/l	
86-74-8	Carbazole	ND	2.0	0.80	ug/l	
106-47-8	4-Chloroaniline	ND	2.0	0.80	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.70	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.70	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	1.0	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.70	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.70	ug/l	
218-01-9	Chrysene	ND	2.0	0.70	ug/l	

Method Blank Summary

Page 2 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MB	1G141259.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
53-70-3	Dibenzo(a,h)anthracene	ND	2.0	1.3	ug/l	
132-64-9	Dibenzofuran	ND	2.0	0.70	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	1.2	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	2.0	0.80	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	2.0	0.80	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	2.0	0.90	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	5.0	4.0	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.80	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.70	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	2.0	0.80	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	2.0	0.80	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	0.80	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	2.0	0.70	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	0.70	ug/l	
206-44-0	Fluoranthene	ND	2.0	0.90	ug/l	
86-73-7	Fluorene	ND	2.0	0.60	ug/l	
118-74-1	Hexachlorobenzene	ND	2.0	0.70	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.90	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	5.0	4.0	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.90	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	2.0	1.4	ug/l	
78-59-1	Isophorone	ND	2.0	0.70	ug/l	
90-12-0	1-Methylnaphthalene	ND	2.0	0.70	ug/l	
91-57-6	2-Methylnaphthalene	ND	2.0	0.70	ug/l	
91-20-3	Naphthalene	ND	2.0	0.80	ug/l	
88-74-4	2-Nitroaniline	ND	2.0	0.90	ug/l	
99-09-2	3-Nitroaniline	ND	5.0	4.0	ug/l	
100-01-6	4-Nitroaniline	ND	2.0	0.90	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.80	ug/l	
62-75-9	N-Nitrosodimethylamine	ND	5.0	4.0	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	2.0	0.70	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.70	ug/l	
85-01-8	Phenanthrene	ND	2.0	0.60	ug/l	
129-00-0	Pyrene	ND	2.0	0.70	ug/l	
110-86-1	Pyridine	ND	5.0	4.0	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	2.0	0.80	ug/l	

Method Blank Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MB	1G141259.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples: Method: SW846 8270C

DA13527-1

CAS No.	Surrogate Recoveries	Limits
367-12-4	2-Fluorophenol	57% 10-130%
4165-62-2	Phenol-d5	40% 10-130%
118-79-6	2,4,6-Tribromophenol	104% 10-135%
4165-60-0	Nitrobenzene-d5	88% 19-130%
321-60-8	2-Fluorobiphenyl	90% 20-130%
1718-51-0	Terphenyl-d14	93% 13-149%

Blank Spike Summary

Page 1 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-BS	1G141260.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
65-85-0	Benzoic Acid	50	18.1	36	10-130
59-50-7	4-Chloro-3-methyl phenol	50	45.2	90	54-130
95-57-8	2-Chlorophenol	50	41.5	83	21-130
120-83-2	2,4-Dichlorophenol	50	44.8	90	28-130
105-67-9	2,4-Dimethylphenol	50	41.7	83	39-130
534-52-1	4,6-Dinitro-o-cresol	50	46.2	92	24-144
51-28-5	2,4-Dinitrophenol	50	38.2	76	11-137
95-48-7	2-Methylphenol	50	36.7	73	31-130
106-44-5	4-Methylphenol	50	33.6	67	29-130
88-75-5	2-Nitrophenol	50	43.9	88	21-130
100-02-7	4-Nitrophenol	50	24.8	50	11-130
87-86-5	Pentachlorophenol	50	42.0	84	18-136
108-95-2	Phenol	50	19.4	39	12-130
95-95-4	2,4,5-Trichlorophenol	50	46.9	94	33-130
88-06-2	2,4,6-Trichlorophenol	50	46.3	93	23-130
83-32-9	Acenaphthene	50	43.0	86	48-130
208-96-8	Acenaphthylene	50	44.2	88	48-130
62-53-3	Aniline	50	52.5	105	17-130
120-12-7	Anthracene	50	45.0	90	64-130
92-87-5	Benzidine	50	7.2	14	10-233
56-55-3	Benzo(a)anthracene	50	45.8	92	68-130
205-99-2	Benzo(b)fluoranthene	50	45.7	91	68-130
207-08-9	Benzo(k)fluoranthene	50	45.3	91	67-130
191-24-2	Benzo(g,h,i)perylene	50	46.4	93	66-130
50-32-8	Benzo(a)pyrene	50	45.6	91	66-130
100-51-6	Benzyl Alcohol	50	40.3	81	21-130
101-55-3	4-Bromophenyl phenyl ether	50	45.5	91	61-130
85-68-7	Butyl benzyl phthalate	50	44.9	90	69-135
86-74-8	Carbazole	50	45.7	91	66-130
106-47-8	4-Chloroaniline	50	38.5	77	28-130
111-91-1	bis(2-Chloroethoxy)methane	50	39.9	80	40-130
111-44-4	bis(2-Chloroethyl)ether	50	38.4	77	31-130
108-60-1	2,2'-Oxybis(1-chloropropane)	50	36.7	73	29-130
91-58-7	2-Chloronaphthalene	50	41.2	82	38-130
7005-72-3	4-Chlorophenyl phenyl ether	50	46.6	93	56-130
218-01-9	Chrysene	50	45.4	91	65-130

* = Outside of Control Limits.

Blank Spike Summary

Page 2 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-BS	1G141260.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
53-70-3	Dibenzo(a,h)anthracene	50	47.6	95	64-130
132-64-9	Dibenzofuran	50	44.5	89	53-130
84-74-2	Di-n-butyl phthalate	50	46.7	93	64-130
95-50-1	1,2-Dichlorobenzene	50	35.3	71	13-130
541-73-1	1,3-Dichlorobenzene	50	32.4	65	10-130
106-46-7	1,4-Dichlorobenzene	50	33.6	67	10-130
91-94-1	3,3'-Dichlorobenzidine	50	35.8	72	43-135
84-66-2	Diethyl phthalate	50	47.1	94	65-130
131-11-3	Dimethyl phthalate	50	46.4	93	61-130
121-14-2	2,4-Dinitrotoluene	50	47.7	95	67-130
606-20-2	2,6-Dinitrotoluene	50	46.9	94	63-130
117-84-0	Di-n-octyl phthalate	50	46.5	93	65-136
122-66-7	1,2-Diphenylhydrazine	50	41.9	84	55-130
117-81-7	bis(2-Ethylhexyl)phthalate	50	46.2	92	67-133
206-44-0	Fluoranthene	50	46.6	93	63-130
86-73-7	Fluorene	50	44.8	90	57-130
118-74-1	Hexachlorobenzene	50	47.8	96	59-130
87-68-3	Hexachlorobutadiene	50	32.7	65	10-130
77-47-4	Hexachlorocyclopentadiene	50	33.6	67	10-130
67-72-1	Hexachloroethane	50	28.8	58	10-130
193-39-5	Indeno(1,2,3-cd)pyrene	50	46.3	93	64-130
78-59-1	Isophorone	50	43.2	86	41-130
90-12-0	1-Methylnaphthalene	50	41.2	82	36-130
91-57-6	2-Methylnaphthalene	50	41.7	83	32-130
91-20-3	Naphthalene	50	40.2	80	29-130
88-74-4	2-Nitroaniline	50	43.7	87	60-130
99-09-2	3-Nitroaniline	50	40.9	82	56-139
100-01-6	4-Nitroaniline	50	48.2	96	66-130
98-95-3	Nitrobenzene	50	42.4	85	34-130
62-75-9	N-Nitrosodimethylamine	50	31.1	62	19-130
86-30-6	N-Nitrosodiphenylamine	50	44.4	89	63-130
621-64-7	N-Nitroso-di-n-propylamine	50	42.5	85	37-130
85-01-8	Phenanthrene	50	45.3	91	64-130
129-00-0	Pyrene	50	43.8	88	70-130
110-86-1	Pyridine	50	23.8	48	10-130
120-82-1	1,2,4-Trichlorobenzene	50	36.9	74	17-130

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-BS	1G141260.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples: Method: SW846 8270C

DA13527-1

CAS No.	Surrogate Recoveries	BSP	Limits
367-12-4	2-Fluorophenol	53%	10-130%
4165-62-2	Phenol-d5	36%	10-130%
118-79-6	2,4,6-Tribromophenol	100%	10-135%
4165-60-0	Nitrobenzene-d5	82%	19-130%
321-60-8	2-Fluorobiphenyl	83%	20-130%
1718-51-0	Terphenyl-d14	87%	13-149%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MS	1G141262.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
OP17472-MSD	1G141263.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
DA12300-7	1G141261.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	DA12300-7 ug/l	Spike Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	ND		50	ND	0* a	50	ND	0* a	nc	10-130/30
59-50-7	4-Chloro-3-methyl phenol	ND		50	36.6	73	50	47.0	94	25	40-130/30
95-57-8	2-Chlorophenol	ND		50	31.1	62	50	40.5	81	26	10-130/30
120-83-2	2,4-Dichlorophenol	ND		50	34.0	68	50	43.2	86	24	10-130/30
105-67-9	2,4-Dimethylphenol	ND		50	30.8	62	50	40.6	81	27	13-130/30
534-52-1	4,6-Dinitro-o-cresol	ND		50	22.7	45	50	22.7	45	0	10-130/30
51-28-5	2,4-Dinitrophenol	ND		50	14.2	28	50	15.2	30	7	10-130/30
95-48-7	2-Methylphenol	ND		50	28.6	57	50	39.1	78	31* b	16-130/30
106-44-5	4-Methylphenol	ND		50	25.5	51	50	33.6	67	27	12-130/30
88-75-5	2-Nitrophenol	ND		50	32.9	66	50	41.9	84	24	10-130/30
100-02-7	4-Nitrophenol	ND		50	14.0	28	50	15.0	30	7	10-130/30
87-86-5	Pentachlorophenol	ND		50	19.1	38	50	19.7	39	3	10-130/30
108-95-2	Phenol	ND		50	15.1	30	50	19.4	39	25	10-130/30
95-95-4	2,4,5-Trichlorophenol	ND		50	33.4	67	50	39.2	78	16	10-130/30
88-06-2	2,4,6-Trichlorophenol	ND		50	29.6	59	50	32.5	65	9	10-130/30
83-32-9	Acenaphthene	ND		50	31.8	64	50	41.7	83	27	31-130/30
208-96-8	Acenaphthylene	ND		50	29.0	58	50	38.4	77	28	31-130/30
62-53-3	Aniline	ND		50	37.2	74	50	50.2	100	30	10-130/30
120-12-7	Anthracene	ND		50	35.7	71	50	46.3	93	26	38-140/30
92-87-5	Benzidine	ND		50	ND	0* a	50	ND	0* a	nc	10-233/30
56-55-3	Benzo(a)anthracene	ND		50	36.3	73	50	47.5	95	27	44-149/30
205-99-2	Benzo(b)fluoranthene	ND		50	36.6	73	50	46.9	94	25	44-153/30
207-08-9	Benzo(k)fluoranthene	ND		50	36.1	72	50	47.6	95	27	44-151/30
191-24-2	Benzo(g,h,i)perylene	ND		50	37.1	74	50	48.6	97	27	45-149/30
50-32-8	Benzo(a)pyrene	ND		50	36.1	72	50	47.7	95	28	40-148/30
100-51-6	Benzyl Alcohol	ND		50	32.2	64	50	43.4	87	30	18-130/30
101-55-3	4-Bromophenyl phenyl ether	ND		50	37.2	74	50	48.2	96	26	41-139/30
85-68-7	Butyl benzyl phthalate	ND		50	35.4	71	50	47.9	96	30	47-159/30
86-74-8	Carbazole	ND		50	35.4	71	50	46.0	92	26	19-147/30
106-47-8	4-Chloroaniline	ND		50	31.6	63	50	34.5	69	9	10-130/30
111-91-1	bis(2-Chloroethoxy)methane	ND		50	32.1	64	50	43.5	87	30	26-130/30
111-44-4	bis(2-Chloroethyl)ether	ND		50	30.7	61	50	41.7	83	30	21-130/30
108-60-1	2,2'-Oxybis(1-chloropropane)	ND		50	28.5	57	50	39.6	79	33* b	20-130/30
91-58-7	2-Chloronaphthalene	ND		50	33.2	66	50	44.4	89	29	25-130/30
7005-72-3	4-Chlorophenyl phenyl ether	ND		50	38.1	76	50	48.9	98	25	34-131/30
218-01-9	Chrysene	ND		50	35.9	72	50	47.9	96	29	40-153/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 2 of 3

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MS	1G141262.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
OP17472-MSD	1G141263.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
DA12300-7	1G141261.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Compound	DA12300-7	Spike	MS	MS	Spike	MSD	MSD	RPD	Limits
		ug/l	Q	ug/l	%	ug/l	ug/l	%		Rec/RPD
53-70-3	Dibenzo(a,h)anthracene	ND	50	37.8	76	50	49.7	99	27	43-153/30
132-64-9	Dibenzofuran	ND	50	35.7	71	50	46.5	93	26	10-130/30
84-74-2	Di-n-butyl phthalate	ND	50	36.7	73	50	48.8	98	28	44-152/30
95-50-1	1,2-Dichlorobenzene	ND	50	27.3	55	50	38.6	77	34* b	11-130/30
541-73-1	1,3-Dichlorobenzene	ND	50	25.2	50	50	35.6	71	34* b	10-130/30
106-46-7	1,4-Dichlorobenzene	ND	50	26.4	53	50	37.1	74	34* b	10-130/30
91-94-1	3,3'-Dichlorobenzidine	ND	50	27.2	54	50	33.4	67	20	10-141/30
84-66-2	Diethyl phthalate	ND	50	37.6	75	50	49.1	98	27	58-130/30
131-11-3	Dimethyl phthalate	ND	50	36.9	74	50	48.1	96	26	59-130/30
121-14-2	2,4-Dinitrotoluene	ND	50	38.8	78	50	49.6	99	24	44-147/30
606-20-2	2,6-Dinitrotoluene	ND	50	37.7	75	50	48.8	98	26	41-142/30
117-84-0	Di-n-octyl phthalate	ND	50	36.0	72	50	48.2	96	29	43-162/30
122-66-7	1,2-Diphenylhydrazine	ND	50	33.3	67	50	44.7	89	29	34-142/30
117-81-7	bis(2-Ethylhexyl)phthalate	ND	50	36.2	72	50	48.8	98	30	44-159/30
206-44-0	Fluoranthene	ND	50	37.1	74	50	48.7	97	27	42-148/30
86-73-7	Fluorene	ND	50	36.8	74	50	47.8	96	26	34-134/30
118-74-1	Hexachlorobenzene	ND	50	38.5	77	50	51.1	102	28	40-140/30
87-68-3	Hexachlorobutadiene	ND	50	25.4	51	50	36.4	73	36* b	10-130/30
77-47-4	Hexachlorocyclopentadiene	ND	50	26.0	52	50	36.7	73	34* b	10-130/30
67-72-1	Hexachloroethane	ND	50	21.6	43	50	31.7	63	38* b	10-130/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	50	37.0	74	50	49.0	98	28	42-153/30
78-59-1	Isophorone	ND	50	34.3	69	50	45.4	91	28	27-130/30
90-12-0	1-Methylnaphthalene	ND	50	33.1	66	50	44.5	89	29	25-130/30
91-57-6	2-Methylnaphthalene	ND	50	32.6	65	50	43.9	88	30	23-130/30
91-20-3	Naphthalene	ND	50	32.4	65	50	43.9	88	30	21-130/30
88-74-4	2-Nitroaniline	ND	50	32.9	66	50	43.6	87	28	26-150/30
99-09-2	3-Nitroaniline	ND	50	33.1	66	50	39.7	79	18	29-130/30
100-01-6	4-Nitroaniline	ND	50	35.2	70	50	47.0	94	29	34-145/30
98-95-3	Nitrobenzene	ND	50	34.4	69	50	45.9	92	29	24-130/30
62-75-9	N-Nitrosodimethylamine	ND	50	23.8	48	50	33.1	66	33* b	17-130/30
86-30-6	N-Nitrosodiphenylamine	ND	50	11.6	23	50	14.8	30	24	10-130/30
621-64-7	N-Nitroso-di-n-propylamine	ND	50	33.6	67	50	44.6	89	28	23-130/30
85-01-8	Phenanthrene	ND	50	36.2	72	50	47.3	95	27	42-140/30
129-00-0	Pyrene	ND	50	34.7	69	50	46.1	92	28	46-148/30
110-86-1	Pyridine	ND	50	21.2	42	50	27.7	55	27	10-130/30
120-82-1	1,2,4-Trichlorobenzene	ND	50	29.5	59	50	40.9	82	32* b	10-130/30

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 3 of 3

Job Number: DA13527

Account: ABSSWYB Absaroka Solutions

Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17472-MS	1G141262.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
OP17472-MSD	1G141263.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402
DA12300-7	1G141261.D	1	02/18/19	DC	02/18/19	OP17472	E1G2402

The QC reported here applies to the following samples:

Method: SW846 8270C

DA13527-1

CAS No.	Surrogate Recoveries	MS	MSD	DA12300-7	Limits
367-12-4	2-Fluorophenol	36%	46%	33%	10-130%
4165-62-2	Phenol-d5	27%	34%	30%	10-130%
118-79-6	2,4,6-Tribromophenol	69%	78%	49%	10-135%
4165-60-0	Nitrobenzene-d5	66%	87%	93%	19-130%
321-60-8	2-Fluorobiphenyl	64%	86%	94%	20-130%
1718-51-0	Terphenyl-d14	69%	90%	96%	13-149%

(a) Outside control limits due to possible matrix interference.

(b) Variability of recovery may be due to sample matrix/nonhomogeneity.

* = Outside of Control Limits.

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: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2310-MB	GB49072.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	90% 60-140%

Blank Spike Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2310-BS	GB49073.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13527-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	1.73	79	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	95%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-22MS	GB49074.D	1	02/15/19	BB	n/a	n/a	GGB2310
DA12301-22MSD	GB49075.D	1	02/15/19	BB	n/a	n/a	GGB2310
DA12301-22	GB49076.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13527-1

CAS No.	Compound	DA12301-22 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	2.2	1.67	76	2.2	1.70	77	2	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-22	Limits
120-82-1	1,2,4-Trichlorobenzene	96%	96%	94%	60-140%

* = Outside of Control Limits.

GC/LC 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: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-MB	FC62555.D	1	02/15/19	RB	02/15/19	OP17465	GFC2561

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

DA13527-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	86% 11-142%

9.1.1
9

Blank Spike Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-BS	FC62594.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562

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

DA13527-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	3.62	72	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	85%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13527
Account: ABSSWYB Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-MS	FC62595.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562
OP17465-MSD	FC62596.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562
DA12300-2	FC62559.D	1	02/16/19	RB	02/15/19	OP17465	GFC2561

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

DA13527-1

CAS No.	Compound	DA12300-2 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	4.19	84	5	4.34	87	4	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12300-2	Limits
84-15-1	o-Terphenyl	98%	105%	89%	11-142%

* = Outside of Control Limits.

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: DA13527
Account: ABSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27343
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/14/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	11	30		
Antimony	30	2.1	10		
Arsenic	25	3.8	7	2.6	<25
Barium	10	.2	2		
Beryllium	10	.9	1.3		
Boron	50	.8	7.4	-1.1	<50
Cadmium	10	.2	1.6		
Calcium	400	2.4	53	29.6	<400
Chromium	10	.3	1.7		
Cobalt	5.0	.5	2.3		
Copper	10	.8	2.3		
Iron	10	1.5	3.1	0.50	<10
Lead	50	2.1	6.3		
Lithium	5.0	.4	4		
Magnesium	200	6.8	31	8.6	<200
Manganese	5.0	.5	1.1	0.10	<5.0
Molybdenum	10	.4	4.3		
Nickel	30	.5	6.1		
Phosphorus	100	15	24		
Potassium	1000	84	250	41.7	<1000
Selenium	50	7.1	21		
Silicon	50	4.7	45		
Silver	30	.3	4		
Sodium	400	13	51	42.5	<400
Strontium	5.0	.01	.6	-0.10	<5.0
Thallium	10	1.8	7.5		
Tin	60	12	51		
Titanium	10	.1	1.9		
Uranium	50	2.9	8.5		
Vanadium	10	.4	.7		
Zinc	30	.4	3.8		

Associated samples MP27343: DA13527-1, DA13527-1F

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

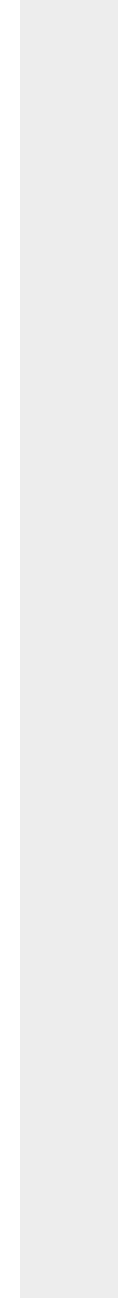
QC Batch ID: MP27343
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/14/19

Metal	RL	IDL	MDL	MB raw	final
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(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13527
 Account: ABSSWYB - Absaroka Solutions
 Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27343
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MS		SpikeLot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	0.00	1120	1000	109.3	70-130
Barium					
Beryllium					
Boron	180	1200	1000	104.3	70-130
Cadmium	anr				
Calcium	30900	58400	25000	110.0	70-130
Chromium	anr				
Cobalt					
Copper	anr				
Iron	101	5310	5000	104.3	70-130
Lead	anr				
Lithium					
Magnesium	1570	26300	25000	98.9	70-130
Manganese	12.8	521	500	101.6	70-130
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium	46200	76200	25000	113.2	70-130
Selenium	anr				
Silicon					
Silver	anr				
Sodium	58100	83900	25000	108.0	70-130
Strontium	102	600	500	99.6	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP27343: DA13527-1, DA13527-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13527
 Account: ABSSWYB - Absaroka Solutions
 Project: SDE_Vaneta_DAF_Permitting

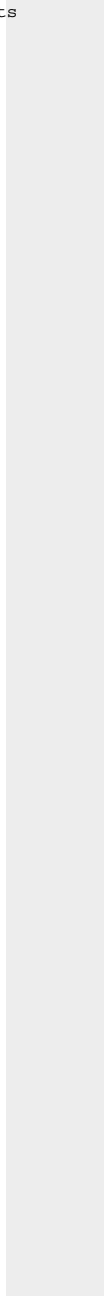
QC Batch ID: MP27343
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MS	SpikeLot ICPALL2 % Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27343
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MSD		Spikelet ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	0.00	1100	1000	107.3	1.8	20
Barium						
Beryllium						
Boron	180	1180	1000	102.3	1.7	20
Cadmium	anr					
Calcium	30900	56900	25000	104.0	2.6	20
Chromium	anr					
Cobalt						
Copper	anr					
Iron	101	5260	5000	103.3	0.9	20
Lead	anr					
Lithium						
Magnesium	1570	26000	25000	97.7	1.1	20
Manganese	12.8	513	500	100.0	1.5	20
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium	46200	75300	25000	109.6	1.2	20
Selenium	anr					
Silicon						
Silver	anr					
Sodium	58100	82600	25000	102.8	1.6	20
Strontium	102	595	500	98.6	0.8	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP27343: DA13527-1, DA13527-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13527
 Account: ABSSWYB - Absaroka Solutions
 Project: SDE_Vaneta_DAF_Permitting

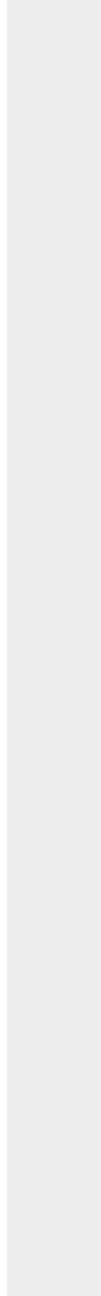
QC Batch ID: MP27343
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MSD	SpikeLot ICPALL2 % Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits
 (anr) Analyte not requested



SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13527

Account: ABSSWYB - Absaroka Solutions

Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27343

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	1090	1000	109.0	85-115
Barium				
Beryllium				
Boron	1030	1000	103.0	85-115
Cadmium	anr			
Calcium	26400	25000	105.6	85-115
Chromium	anr			
Cobalt				
Copper	anr			
Iron	5250	5000	105.0	85-115
Lead	anr			
Lithium				
Magnesium	24300	25000	97.2	85-115
Manganese	505	500	101.0	85-115
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	27400	25000	109.6	85-115
Selenium	anr			
Silicon				
Silver	anr			
Sodium	25900	25000	103.6	85-115
Strontium	505	500	101.0	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27343: DA13527-1, DA13527-1F

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

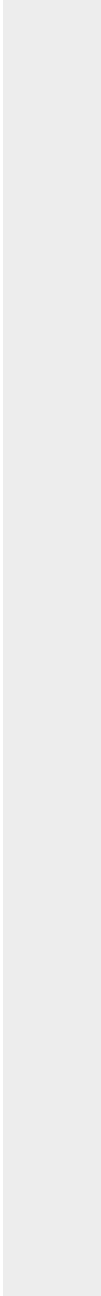
QC Batch ID: MP27343
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27351
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/14/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079	0.10	<2.0
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.046	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP27351: DA13527-1, DA13527-1F

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: DA13527
Account: ABSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27351
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/14/19

Metal	DA13472-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	21.3	219	400	52.3N(a)	70-130
Beryllium					
Boron					
Cadmium	anr				
Calcium	anr				
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Magnesium	anr				
Manganese					
Molybdenum					
Nickel	anr				
Phosphorus					
Potassium					
Selenium	0.22	185	200	92.0	70-130
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP27351: DA13527-1, DA13527-1F

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 and/or sample nonhomogeneity.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13527
Account: ABSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27351
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/14/19

Metal	DA13472-1 Original	MSD	Spikelot ICPAL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	21.3	214	400	51.0N(a)	2.3	20
Beryllium						
Boron						
Cadmium	anr					
Calcium	anr					
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium	anr					
Manganese						
Molybdenum						
Nickel	anr					
Phosphorus						
Potassium						
Selenium	0.22	169	200	84.0	9.0	20
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP27351: DA13527-1, DA13527-1F

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 and/or sample nonhomogeneity.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13527

Account: ABSSWYB - Absaroka Solutions

Project: SDE_Vaneta_DAF_Permitting

QC Batch ID: MP27351

Methods: EPA 200.8

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	399	400	99.8	85-115
Beryllium				
Boron				
Cadmium	anr			
Calcium	anr			
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium	anr			
Manganese				
Molybdenum				
Nickel	anr			
Phosphorus				
Potassium				
Selenium	188	200	94.0	85-115
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27351: DA13527-1, DA13527-1F

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(anr) Analyte not requested

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: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN46123	5.0	0.0	mg/l	500	479	95.7	90-110%
Alkalinity, Carbonate	GN46124	5.0	0.0	mg/l	500	479	95.7	80-120%
Alkalinity, Total as CaCO3	GN46122	5.0	0.0	mg/l	500	479	95.7	90-110%
Bromide	GP24579/GN46097	0.050	0.0	mg/l	0.5	0.517	103.4	90-110%
Bromide	GP24584/GN46105	0.050	0.0	mg/l	0.5	0.537	107.4	90-110%
Chloride	GP24579/GN46097	0.50	0.0	mg/l	5	5.00	100.0	90-110%
Chloride	GP24584/GN46105	0.50	0.0	mg/l	5	5.34	106.8	90-110%
Fluoride	GP24579/GN46097	0.10	0.0	mg/l	1	1.00	100.0	90-110%
Fluoride	GP24584/GN46105	0.10	0.0	mg/l	1	1.04	104.0	90-110%
HEM Oil and Grease	GP24592/GN46119	5.0	3.2	mg/l	40	33.2	83.0	78-114%
Nitrogen, Nitrate	GP24579/GN46097	0.010	0.0	mg/l	0.1	0.103	103.0	90-110%
Nitrogen, Nitrate	GP24584/GN46105	0.010	0.0	mg/l	0.1	0.108	108.0	90-110%
Nitrogen, Nitrite	GP24579/GN46097	0.0040	0.0	mg/l	0.05	0.0497	99.4	90-110%
Nitrogen, Nitrite	GP24584/GN46105	0.0040	0.0	mg/l	0.05	0.0518	103.6	90-110%
Solids, Total Dissolved	GN46118	10	0.0	mg/l	400	409	102.3	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	1.49	1.6	105.4	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	98.8	99.5	100.6	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	998	1000	100.5	90-110%
Sulfate	GP24579/GN46097	0.50	0.0	mg/l	5	5.02	100.4	90-110%
Sulfate	GP24584/GN46105	0.50	0.0	mg/l	5	5.33	106.6	90-110%
pH	GN46109			su	6.00	6.00	100.0	99.1-100.9%
pH	GN46109			su	6.00	6.00	100.0	99.1-100.9%
pH	GN46109			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46109			su	8.00	7.99	99.9	99.1-100.9%
pH	GN46109			su	8.00	7.99	99.9	99.1-100.9%
pH	GN46109			su	8.00	7.98	99.8	99.1-100.9%

Associated Samples:

Batch GN46109: DA13527-1
Batch GN46118: DA13527-1
Batch GN46122: DA13527-1
Batch GN46123: DA13527-1
Batch GN46124: DA13527-1
Batch GP24579: DA13527-1
Batch GP24584: DA13527-1
Batch GP24586: DA13527-1
Batch GP24592: DA13527-1
(*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
HEM Oil and Grease	GP24592/GN46119	mg/l	40	32.6	1.8	18%

Associated Samples:
Batch GP24592: DA13527-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13527
Account: ABSSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO ₃	GN46122	DA13527-1	mg/l	1540	1540	0.1	0-20%
Solids, Total Dissolved	GN46118	DA13605-2	mg/l	525	527	0.4	0-5%
Specific Conductivity	GP24586/GN46110	DA13483-1	umhos/cm	792	821	3.6	0-20%
pH	GN46109	DA13483-1	su	8.61	8.59	0.2	0-5%
pH	GN46109	DA13483-1	su	8.61	8.59	0.2	0-5%

Associated Samples:

Batch GN46109: DA13527-1
Batch GN46118: DA13527-1
Batch GN46122: DA13527-1
Batch GP24586: DA13527-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13527
Account: ABSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP24579/GN46097	DA13495-1	mg/l	0.0	5	5.1	102.0	80-120%
Bromide	GP24584/GN46105	DA13531-3	mg/l	0.0	0.5	0.50	100.0	80-120%
Chloride	GP24579/GN46097	DA13495-1	mg/l	133	50	182	98.0	80-120%
Chloride	GP24584/GN46105	DA13531-3	mg/l	1.6	5	6.7	102.0	80-120%
Fluoride	GP24579/GN46097	DA13495-1	mg/l	0.87	10	10.8	99.3	80-120%
Fluoride	GP24584/GN46105	DA13531-3	mg/l	0.050	1	1.0	95.0	80-120%
HEM Oil and Grease	GP24592/GN46119	DA13527-1	mg/l	41.8	40	76.8	87.5	78-114%
Nitrogen, Nitrate	GP24579/GN46097	DA13495-1	mg/l	0.29	1	1.3	101.0	80-120%
Nitrogen, Nitrate	GP24584/GN46105	DA13531-3	mg/l	0.23	0.1	0.33	100.0	80-120%
Nitrogen, Nitrite	GP24579/GN46097	DA13495-1	mg/l	0.26	0.5	0.72	92.0	80-120%
Nitrogen, Nitrite	GP24584/GN46105	DA13531-3	mg/l	0.0	0.05	0.058	116.0	80-120%
Sulfate	GP24579/GN46097	DA13495-1	mg/l	210	50	257	94.0	80-120%
Sulfate	GP24584/GN46105	DA13531-3	mg/l	1.3	5	6.3	100.0	80-120%

Associated Samples:

Batch GP24579: DA13527-1

Batch GP24584: DA13527-1

Batch GP24592: DA13527-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13527
Account: ABSWYB - Absaroka Solutions
Project: SDE_Vaneta_DAF_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Bromide	GP24579/GN46097	DA13495-1	mg/l	0.0	5	5.1	0.0	20%
Bromide	GP24584/GN46105	DA13531-3	mg/l	0.0	0.5	0.52	3.9	20%
Chloride	GP24579/GN46097	DA13495-1	mg/l	133	50	182	0.0	20%
Chloride	GP24584/GN46105	DA13531-3	mg/l	1.6	5	6.8	1.5	20%
Fluoride	GP24579/GN46097	DA13495-1	mg/l	0.87	10	10.8	0.0	20%
Fluoride	GP24584/GN46105	DA13531-3	mg/l	0.050	1	1.1	9.5	20%
Nitrogen, Nitrate	GP24579/GN46097	DA13495-1	mg/l	0.29	1	1.3	0.0	20%
Nitrogen, Nitrate	GP24584/GN46105	DA13531-3	mg/l	0.23	0.1	0.34	3.0	20%
Nitrogen, Nitrite	GP24579/GN46097	DA13495-1	mg/l	0.26	0.5	0.72	0.0	20%
Nitrogen, Nitrite	GP24584/GN46105	DA13531-3	mg/l	0.0	0.05	0.059	1.7	20%
Sulfate	GP24579/GN46097	DA13495-1	mg/l	210	50	257	0.0	20%
Sulfate	GP24584/GN46105	DA13531-3	mg/l	1.3	5	6.5	3.1	20%

Associated Samples:

Batch GP24579: DA13527-1

Batch GP24584: DA13527-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits