

Groundwater Sample Results, Electronic Data Deliverable, and Data Validation Report, SDG BSI20

Marine Corps Ballistics Base Barstow Barstow, California

November 2019

CONTRACT_ID DO_CTO_NUMBER PHASE INSTALLATION_ID SAMPLE_NAME ANALYTICAL_METHOD LAB_NAME CONTRACTOR_NAME LEACHATE_METHOD SAMPLE_BASIS EXTRACTION_METHOD RESULT_TYPE SAMPLE_MEDIUM CLEANUP_METHOD QC_LEVEL LEACHATE_DATE LEACHATE_TIME EXTRACTION_DATE EXTRACTION_TIME ANALYSIS_DATE ANALYSIS_TIME LAB_SAMPLE_ID LAB_REPORT_DATE LAB_REPORT_NUMBER FILTER_SIZE DILUTION RUN_NUMBER PERCENT_MOISTURE
PERCENT_LIPID ANALYTE_ID ANALYTE_VALUE ORIGINAL_ANALYTE_VALUE RESULT_UNITS LAB_QUALIFIER VALIDATOR_QUALIFIER
FINAL_QUALIFIER DETECTED GC_COLUMN_TYPE ANALYSIS_RESULT_TYPE RADIOLOGICAL_ERROR RESULT_NARRATIVE
RETENTION_TIME QC_CONTROL_LIMIT_CODE QC_ACCURACY_UPPER QC_ACCURACY_LOWER CONTROL_LIMIT_DATE
RELATIVE_PCT_DIFF QC_NARRATIVE MDL CDL IDL PQL CRQL DETECTION_LIMIT VALIDATOR_DET_LIMIT VALIDATOR_MDL DI
LOD LOQ SDG LEACH_LOT METHOD_BATCH PREP_BATCH RUN_BATCH ANALYSIS_BATCH VALIDATOR_NAME VALIDATION_QC
VAL_DATE REPORTABLE_RESULT
N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 335-67-1 58 58
NG_L Y TRG 0.46 0.46 1.1 1.8 BSI20
18323012 18323012 18323012 18323012 Y
N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG_L J Y TRG 0.37 0.37 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG_L J Y TRG 0.46 0.46 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 2058-94-8 1.1 0
NG_L U N TRG 0.46 0.46 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 307-55-1 1.1 0
NG_L U N TRG 0.46 0.46 1.1 1.8 BSI20 18323012 18323012 18323012 Y
N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000 W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 72629-94-8 1.1 0
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 72629-94-8 1.1 0 NG_L U N TRG 0.55 0.55 0.55 1.1 1.8 BSI20
18323012 18323012 18323012 Y
N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG L U N TRG 0.55 0.55 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 307-24-4 54 54
NG_L Y TRG 0.46 0.46 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119 15:00:00 20181126 23:32:00 9903613 20181129 2010255 0.00 1 1 375-85-9 14 14
NG_L Y TRG 0.37 0.37 0.37 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100 BARSTOW_MCLB OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG_L Y TRG 0.28 0.28 0.28 1.0 1.8 BSI20

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N62473-14-D-1405 N6247317F4100		OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:32:00 9903613 20181129 2010255 0.00 1 1 355-46-4 83 83
NG_L Y TRG		0.37 0.37 1.0 1.8 BSI20
18323012 18323012 18323012	18323012	Υ
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:32:00 9903613 20181129 2010255 0.00 1 1 1763-23-1 36 36
NG L Y TRG	13.00.00 20101120	0.46 0.46 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100		OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG_L U N TRG	13.00.00 20101120	0.92 0.92 0.92 2.2 2.8 BSI20
18323012 18323012 18323012	18323012	Y 0.72 0.72 2.2 2.8 BS120
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
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NG_L U N TRG	13:00:00 20181120	
	19222012	0.92 0.92 0.92 2.2 2.8 BSI20 Y
	18323012	
N62473-14-D-1405 N6247317F4100	_	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 335-67-1 1.1 0
NG_L U N TRG	10000010	0.45 0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	_	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 375-95-1 1.1 0
NG_L U N TRG		0.36 0.36 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 335-76-2 1.1 0
NG_L U N TRG		0.45 0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	_	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 2058-94-8 1.1 0
NG_L U N TRG		0.45 0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	_	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 307-55-1 1.1 0
NG_L U N TRG		0.45 0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 72629-94-8 1.1 0
NG_L U N TRG		0.54 0.54 0.54 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 376-06-7 1.1 0
NG_L U N TRG		0.54 0.54 0.54 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 307-24-4 1.1 0
NG_L U N TRG		0.45 0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y

N62473-14-D-1405 N6247317F4100 W UNK 20181119 NG_L U N TRG	BARSTOW_MCLB 15:00:00 20181126	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000 23:41:00 9903614 20181129 2010255 0.00 1 1 375-85-9 1.1 0 0.36 0.36 0.36 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 375-73-5 1.0 0
NG_L U N TRG		0.27 0.27 1.0 1.8 BSI20
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N62473-14-D-1405 N6247317F4100	_	OUI-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:41:00 9903614 20181129 2010255 0.00 1 1 355-46-4 1.0 0
NG_L U N TRG 18323012 18323012 18323012	18323012	0.36 0.36 0.36 1.0 1.8 BSI20 Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119		23:41:00 9903614 20181129 2010255 0.00 1 1 1763-23-1 1.1 0
NG_L U N TRG	13.00.00 20181120	0.45 0.45 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG L U N TRG	13.00.00 20101120	0.91 0.91 0.91 2.2 2.7 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG		0.91 0.91 0.91 2.2 2.7 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG		0.44 0.44 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 375-95-1 1.1 0
NG_L U N TRG	10000010	0.35 0.35 0.35 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 335-76-2 1.1 0 0.44 0.44 1.1 1.8 BSI20
NG_L U N TRG 18323012 18323012 18323012	18323012	Y 0.44 0.44 1.1 1.8 BS120
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119		23:50:00 9903615 20181129 2010255 0.00 1 1 2058-94-8 1.1 0
NG_L U N TRG	13.00.00 20101120	0.44 0.44 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 307-55-1 1.1 0
NG_L U N TRG		0.44 0.44 1.1 1.8 BSI20
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N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 72629-94-8 1.1 0
NG_L U N TRG		0.53 0.53 0.53 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000

W UNK 20181119 NG L U N TRG	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 376-06-7 1.1 0 0.53 0.53 0.53 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	V 0.33 0.33 1.1 1.8 B3120
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG	13.00.00 20101120	0.44 0.44 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y 0.77 0.77 1.1 1.0 B5120
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG	20101120	0.35 0.35 0.35 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
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	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG		0.35 0.35 0.35 0.97 1.8 BSI20
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N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 1763-23-1 1.1 0
NG_L U N TRG		0.44 0.44 1.1 1.8 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 2991-50-6 2.1 0
NG_L U N TRG		0.88 0.88 2.1 2.7 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-14-W-02 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	23:50:00 9903615 20181129 2010255 0.00 1 1 2355-31-9 2.1 0
NG_L U N TRG		0.88 0.88 2.1 2.7 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-17-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L Y TRG		0.48 0.48 1.2 1.9 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-17-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L J Y TRG		0.38 0.38 1.2 1.9 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100	BARSTOW_MCLB	OU1-NNE-17-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L J Y TRG		0.48 0.48 1.2 1.9 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		OU1-NNE-17-01 537_MOD EUROFINS BRADY GCE II NONE NA METHOD 000
W UNK 20181119	15:00:00 20181126	
NG_L U N TRG		0.48 0.48 0.48 1.2 1.9 BSI20
18323012 18323012 18323012	18323012	Y
N62473-14-D-1405 N6247317F4100		
W UNK 20181119	15:00:00 20181126	23:59:00 9903616 20181129 2010255 0.00 1 1 307-55-1 1.2 0

NG_L U N TRG		0.48	0.48	0.48 1.2 1	.9 BSI20
18323012 18323012 18323012 NG2473 14 D 1405 NG247317E4100	18323012	Y OUI NINE 17 01 527 MOD I	ELIDOEING DDAD	V CCE II NONE	NA METHOD 000
N62473-14-D-1405 N6247317F4100 W UNK 20181119	15:00:00 20181126	OU1-NNE-17-01 537_MOD I 23:59:00 9903616 20181			72629-94-8 1.2 0
NG_L U N TRG	13.00.00 20101120	0.58	0.58	0.58 1.2 1	
18323012 18323012 18323012	18323012	Y	0.00	0.00 1.2 1	., 20120
N62473-14-D-1405 N6247317F4100		OU1-NNE-17-01 537_MOD I			NA METHOD 000
W UNK 20181119	15:00:00 20181126				376-06-7 1.2 0
NG_L U N TRG 18323012 18323012 18323012	10222012	0.58 Y	0.58	0.58 1.2 1	.9 BSI20
18323012 18323012 18323012 N62473-14-D-1405 N6247317F4100	18323012 BARSTOW MCLB	OU1-NNE-17-01 537_MOD I	FUROFINS BRAD	Y GCF II NONE	NA METHOD 000
W UNK 20181119	15:00:00 20181126				307-24-4 74 74
NG_L Y TRG		0.48	0.48	0.48 1.2 1.9	
18323012 18323012 18323012	18323012	Y			
N62473-14-D-1405 N6247317F4100		OU1-NNE-17-01 537_MOD			
W UNK 20181119		23:59:00 9903616 20181129	2010255 0.00 1 1		-9 21 21 NG_L
Y TRG 18323012 18323012	0.38 Y	0.38	0.38 1.2 1.9 BSI20	18323012	18323012
N62473-14-D-1405N6247317F4100		OU1-NNE-17-01 537 MOD	EUROFINS BRAD	Y GCE II NONE	NA METHOD 000
W UNK 20181119	_	23:59:00 9903616 20181129	2010255 0.00 1 1		-5 16 16 NG L
Y TRG	0.29	0.29	0.29 1.1 1.9 BSI20	18323012	18323012
18323012 18323012	Y				
N62473-14-D-1405N6247317F4100		OU1-NNE-17-01 537_MOD	EUROFINS BRAD		NA METHOD 000
W UNK 20181119 Y TRG		23:59:00 9903616 20181129	2010255 0.00 1 1		4 130 130 NG_L
Y TRG 18323012 18323012	0.38 Y	0.38	0.38 1.1 1.9 BSI20	18323012	18323012
N62473-14-D-1405N6247317F4100		OU1-NNE-17-01 537_MOD	EUROFINS BRAD	Y GCE II NONE	NA METHOD 000
W UNK 20181119		23:59:00 9903616 20181129	2010255 0.00 1 1	1763-23	
Y TRG	0.48	0.48	0.48 1.2 1.9 BSI20	18323012	18323012
18323012 18323012	Y				
N62473-14-D-1405N6247317F4100	_	OU1-NNE-17-01 537_MOD	EUROFINS BRAD		
W UNK 20181119 U N TRG	15:00:00 20181126	23:59:00 9903616 20181129 0.96	2010255 0.00 1 1 0.96 0.96 2.	2991-50 3 2.9 BSI20	0-6 2.3 0 NG_L 18323012
18323012 18323012 18323012	Y	0.90	0.90 0.90 2.	3 2.9 DS 120	10323012
N62473-14-D-1405N6247317F4100		OU1-NNE-17-01 537_MOD	EUROFINS BRAD	Y GCE II NONE	NA METHOD 000
W UNK 20181119		23:59:00 9903616 20181129	2010255 0.00 1 1	2355-3	
U N TRG		0.96	0.96 0.96 2.	3 2.9 BSI20	18323012
18323012 18323012 18323012	Y				
N62473-14-D-1405N6247317F4100					
000 W UNK 201811 J Y TRG	19 15:00:00 20181127	00:08:00 9903617 2018112 0.45		1 1.8 BSI20	5-67-1 0.76 0.76 NG_L 18323012
18323012 18323012 18323012	Y	0.43	0.43	1 1.6 DS120	10323012
		OU1-9N1W12L05-01 537_M0	DD EUROFINS B	RADY GCE II NO	ONE NA METHOD
000 W UNK 201811	19 15:00:00 20181127	00:08:00 9903617 2018112	29 2010255 0.00 1	1 37	5-95-1 1.1 0 NG_L
U N TRG		0.36	0.36 0.36 1.	1 1.8 BSI20	18323012
	Y DARSTOW MOUR	OLI ONIWIOLOG 01 527 34	D EUDOEDIG P		ONTE NIA NATURATION
N62473-14-D-1405N6247317F4100 000 W UNK 201811	BARSTOW_MCLB 0 19				ONE NA METHOD 5-76-2 1.1 0 NG_L
U N TRG	13.00.00 2010112/	0.45		1 1.8 BSI20	18323012
		~·· ~	0		

10222012	10222012	10222012	3.7						
18323012 N62472 14 D	18323012 1405N624721	18323012 17E4100	Y DADSTOW MCI D	OU1-9N1W12L05-01	527 MOD	ELIDOEING DI	DADV CCE II	NONE NA	METHOD
000 W	-1403N02473. TINIV	17F4100 2019111	DAKSTOW_MCLD	27 00:08:00 9903617	337_MOD 7 20181120	2010255 0.00 1	ADI GCE II	100NE NA	
NG I II	UNK	Z010111	9 13.00.00 201611	00.08.00 990301	7 20101129 5	0.45	0.45 1 1 1 2	2030-94-0 DCI20	1.1 0
NO_L U	18323012	18323012	v	0.4	3	0.43	0.43 1.1 1.6	DS120	16323012
N62473_14_D	-16525012 -1405N624731	16525012 17F4100	RARSTOW MCI R	0.4 OU1-9N1W12L05-01	537 MOD	ELIDOEINS BI	ADV CCE II	NONE NA	METHOD
000 W	-1403N02473. TINIK	1714100 2019111	DAKSTOW_MCLD 0 15:00:00 201811	27 00:08:00 9903617	7 20181120	2010255 0.00 1	ADI GCE II	NONE NA	0 NG I
11	N TD	2010111	9 13.00.00 201011	0.08.00 990301	0.4	5 0.00 1	1 1 2 BSI20	18222012	O NO_L
18323012	18323012	18323012	V	0.43	0.4.	J 0.45 1.1	1.6 DS120	10323012	•
N62473-14-D	-1405N624731	16525012 17F4100	BARSTOW MCI B	0.45 OU1-9N1W12L05-01	537 MOD	FUROFINS BE	ADV GCE II	NONE NA	METHOD
000 W	-140311024731 - HNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	72629-94-8	11 0
NG I II	N	TRG	7 13.00.00 201011	27 00:08:00 9903617 0.5 OU1-9N1W12L05-01	Δ	0.54	0.54.1.1.1.8	RSI20	18323012
18323012	18323012	18323012	Y	0.5	-	0.54	0.5+ 1.1 1.0	B 5120	10323012
N62473-14-D	-1405N624731	17F4100	BARSTOW MCLB	OU1-9N1W12L05-01	537 MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	376-06-7 1 1	0 NG L
II	N TRO	2010111 G	7 13.00.00 201011	0.54	0.5	4 0 54 1 1	1 1 8 BSI20	18323012) 110_E
18323012	18323012	18323012	Y	0.51	0.5	0.511.1	1.0 D0120	10323012	•
N62473-14-D	-1405N624731	17F4100	BARSTOW MCLB	0.54 OU1-9N1W12L05-01	537 MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	307-24-4 0.87	0.87 NG L
J	Y TRO	G	201011	0.45	0.4	5 0.45 1.1	1 1.8 BSI20	18323012	?
18323012	18323012	18323012	Y	0		01.0 11.	1.0 25120	10020012	
N62473-14-D	-1405N624731	17F4100	BARSTOW MCLB	0.45 OU1-9N1W12L05-01	537 MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	375-85-9 1.1	0 NG L
U	N TRO	G		0.36	0.3	6 0.36 1.1	1.8 BSI20	18323012	2
18323012	18323012	18323012	Y	0.36 OU1-9N1W12L05-01					
N62473-14-D	-1405N624731	17F4100	BARSTOW MCLB	OU1-9N1W12L05-01	537 MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	375-73-5 5.1	5.1 NG_L
Y TRO	G		0.2	27 00:08:00 9903617 27 0.2	7 0.2	7 0.99 1.8 BSI20	18323012	2 18323012	2
18323012	18323012		Y						
N62473-14-D	-1405N624731	17F4100	BARSTOW_MCLB	OU1-9N1W12L05-01	537_MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	355-46-4 16	16 NG_L
Y TRO	j		0.3	0.3	6 0.3	6 0.99 1.8 BSI20	18323012	2 18323012	2
18323012	18323012		Y						
N62473-14-D	-1405N624731	17F4100	BARSTOW_MCLB	OU1-9N1W12L05-01	537_MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	1763-23-1	6.1 6.1
NG_L	Y	TRG		0.4	5	0.45	0.45 1.1 1.8	BSI20	18323012
18323012	18323012	18323012	Y	0.4 OU1-9N1W12L05-01					
N62473-14-D	-1405N624731	17F4100	BARSTOW_MCLB	OU1-9N1W12L05-01	537_MOD	EUROFINS BE	RADY GCE II	NONE NA	METHOD
000 W	UNK	2018111	9 15:00:00 201811	27 00:08:00 9903617	7 20181129	2010255 0.00 1	1	2991-50-6	2.2 0
NG_L U	N	TRG		0.9	0	0.90	0.90 2.2 2.7	BSI20	18323012
18323012	18323012		Y						
		17F4100		OU1-9N1W12L05-01					
000 W	UNK		9 15:00:00 201811	27 00:08:00 9903617		2010255 0.00 1			2.2 0
NG_L U	N			0.9	0	0.90	0.90 2.2 2.7	BSI20	18323012
18323012	18323012		Y						
	-1405N624731			OU1-NEP-2-01 537	_	ROFINS BRAD			
W UNI		20181119	15:00:00 20181127			10255 0.00 1 1		-67-1 62 62	_
Y TRO			0.4	15 0.4	5 0.4	5 1.1 1.8 BSI20	18323012	2 18323012	2
18323012	18323012		Y						

N62473-14-D-1405N6247317F4100 W UNK 20181119 Y TRG	15:00:00 20181127	20181129 2010255	NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230	75-95-1 1.2 1.2 NG L J
18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 Y TRG 18323012 18323012	15:00:00 20181127	20181129 2010255	NS BRADY GCE II N 0.00 1 1 3: 1.8 BSI20 183230	35-76-2 0.63 0.63 NG_L J
N62473-14-D-1405N6247317F4100 W UNK 20181119 U N TRG	BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.45	_	NS BRADY GCE II N 0.00 1 1 20 0.45 1.1 1.8 BSI20	058-94-8 1.1 0 NG_L
18323012 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 N TRG	15:00:00 20181127 00:17:00 9903618 0.45	20181129 2010255	NS BRADY GCE II N 0.00 1 1 30 1.8 BSI20 183230	07-55-1 1.1 0 NG_L U
18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 U N TRG	Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.54		NS BRADY GCE II N 0.00 1 1 72 0.54 1.1 1.8 BSI20	2629-94-8 1.1 0 NG_L
18323012 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 N TRG	15:00:00 20181127 00:17:00 9903618 0.54	20181129 2010255	NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230	76-06-7 1.1 0 NG_L U
18323012 18323012 N62473-14-D-1405N6247317F4100	Y BARSTOW MCLB OU1-NEP-2-01	537_MOD EUROFIN	JS BRADY GCF II N	IONE NA METHOD
DI 1 W IINK 2018111	9 15:00:00 20181128 10:24:00 9903	618 20181129 2010	255 0.00 10 2 18 BSI20 183230	307-24-4 97 97 NG_L
DL1 W UNK 2018111	9 15:00:00 20181128 10:24:00 9903 4.5 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618	618 20181129 2010 4.5 4.5 11 537_MOD EUROFIN 20181129 2010255	255 0.00 10 2 18 BSI20 183230 NS BRADY GCE II N	307-24-4 97 97 NG_L 012 18323012 IONE NA METHOD 000 75-85-9 11 11 NG L
DL1 W UNK 2018111 Y TRG 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119	9 15:00:00 20181128 10:24:00 9903 4.5 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618	618 20181129 2010 4.5 4.5 11 537_MOD EUROFIN 20181129 2010255 0.36 0.36 1.1 537_MOD EUROFIN 20181129 2010255	255 0.00 10 2 18 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N	307-24-4 97 97 NG_L 012 18323012 IONE NA METHOD 000 75-85-9 11 11 NG_L 012 18323012 IONE NA METHOD 000 75-73-5 20 20 NG_L
DL1 W UNK 2018111 Y TRG 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 Y TRG 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119	9 15:00:00 20181128 10:24:00 9903 4.5 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.27 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618	618 20181129 2010 4.5 4.5 11 537_MOD EUROFIN 20181129 2010255 0.36 0.36 1.1 537_MOD EUROFIN 20181129 2010255 0.27 0.27 0.99 537_MOD EUROFIN 20181129 2010255	255 0.00 10 2 18 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N	307-24-4 97 97 NG_L 012 18323012 IONE NA METHOD 000 75-85-9 11 11 NG_L 012 18323012 IONE NA METHOD 000 75-73-5 20 20 NG_L 012 18323012 IONE NA METHOD 000 155-46-4 69 69 NG_L
DL1 W UNK 2018111 Y TRG 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119 Y TRG	9 15:00:00 20181128 10:24:00 9903 4.5 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.27 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36	618 20181129 2010 4.5 4.5 11 537_MOD EUROFIN 20181129 2010255 0.36 0.36 1.1 537_MOD EUROFIN 20181129 2010255 0.27 0.27 0.99 537_MOD EUROFIN 20181129 2010255 0.36 0.99 537_MOD EUROFIN 20181129 2010255 0.36 0.99	255 0.00 10 2 18 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3: 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3: 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3: 1.8 BSI20 183230	307-24-4 97 97 NG_L 012 18323012 IONE NA METHOD 000 75-85-9 11 11 NG_L 012 18323012 IONE NA METHOD 000 75-73-5 20 20 NG_L 012 18323012 IONE NA METHOD 000 55-46-4 69 69 NG_L 012 18323012 IONE NA METHOD 000 763-23-1 49 49 NG_L
DL1 W UNK 2018111 Y TRG 18323012 18323012 N62473-14-D-1405N6247317F4100 W UNK 20181119	9 15:00:00 20181128 10:24:00 9903 4.5 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.27 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618 0.36 Y BARSTOW_MCLB OU1-NEP-2-01 15:00:00 20181127 00:17:00 9903618	618 20181129 2010 4.5 4.5 11 537_MOD EUROFIN 20181129 2010255 0.36 0.36 1.1 537_MOD EUROFIN 20181129 2010255 0.27 0.27 0.99 537_MOD EUROFIN 20181129 2010255 0.36 0.99 537_MOD EUROFIN 20181129 2010255 0.36 0.99 537_MOD EUROFIN 20181129 2010255 0.36 0.99 537_MOD EUROFIN 20181129 2010255 0.45 1.1	255 0.00 10 2 18 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 3' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 1' 1.8 BSI20 183230 NS BRADY GCE II N 0.00 1 1 1' 1.8 BSI20 183230	307-24-4 97 97 NG_L 012 18323012 IONE NA METHOD 000 75-85-9 11 11 NG_L 012 18323012 IONE NA METHOD 000 75-73-5 20 20 NG_L 012 18323012 IONE NA METHOD 000 55-46-4 69 69 NG_L 012 18323012 IONE NA METHOD 000 763-23-1 49 49 NG_L 012 18323012 IONE NA METHOD 000 763-23-1 49 49 NG_L 012 18323012 IONE NA METHOD 000 763-23-1 49 49 NG_L 012 18323012

W U	UNK N	20181119 TRG	15:00:00 20181127	00:17:00 9903618 0.90	20181129	2010255 0.00 1 1 0.90 0.90 2.2 2.7	2355-31-9 2.2 0 NG_L BSI20 18323012	
183230			Y					
N62473	8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD		II NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	335-67-1 23 23 NG_L	
Y	TRG		0.43	3	0.43	0.43 1.0 1.7 BSI20	18323012 18323012	
183230			Y					
	8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS BRADY GCE		0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	375-95-1 3.8 3.8 NG_L	
Y 192220	TRG	2	0.35 Y)	0.35	0.35 1.0 1.7 BSI20	18323012 18323012	
183230				OUI NDE 1 01	527 MOD	ELIBORING DRADV CCI	EIL NONE NA METHOD OO	10
N62473 W	8-14-D-1405N62		BARSTOW_MCLB				EII NONE NA METHOD 00	U
Y Y	UNK TRG	20181119	15:00:00 20181127 0.4	00:26:00 9903619		2010255 0.00 1 1	335-76-2 2.2 2.2 NG_L 18323012 18323012	
183230		2	V.4.)	0.43	0.43 1.0 1.7 BSI20	18323012 18323012	
	12 1832301 8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	ELIDOEING DDADV CCI	II NONE NA METHOD 00	10
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1		U
U	N N	TRG	13.00.00 20101127	0.43	20101129	0.43 0.43 1.0 1.7		
183230			Y	0.43		0.43 1.0 1.7	16323012	
	3-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	FUROFINS BRADY GCE	II NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1		
N N	TRG	20101117	0.43		0.43	0.43 1.0 1.7 BSI20	18323012 18323012	
183230		2	Y		0.15	0.13 1.0 1.7 25120	10323012	
	8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS BRADY GCF	II NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	72629-94-8 1.0 0 NG L	
U	N	TRG		0.52		0.52 0.52 1.0 1.7		
183230	12 1832301		Y					
N62473	8-14-D-1405N62	247317F4100	BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS BRADY GCE	II NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619	20181129	2010255 0.00 1 1	376-06-7 1.0 0 NG_L U	
N	TRG		0.52	2	0.52	0.52 1.0 1.7 BSI20	18323012 18323012	
183230	12 1832301	2	Y					
N62473	8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD		III NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	307-24-4 7.3 7.3 NG_L	
Y	TRG		0.43	3	0.43	0.43 1.0 1.7 BSI20	18323012 18323012	
183230			Y					
	8-14-D-1405N62		BARSTOW_MCLB		537_MOD		EII NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	375-85-9 3.0 3.0 NG_L	
Y	TRG	2	0.33)	0.35	0.35 1.0 1.7 BSI20	18323012 18323012	
	12 1832301		Y DADGTOW MCLD	OUI NDE 1 01	527 MOD	ELIBOEING DRADY COL	THE NAME AND ADDRESS OF	
	8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD		EII NONE NA METHOD 00	U
W	UNK TRG	20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00 1 1	375-73-5 18 18 NG_L	
Y 183230		2	0.20 Y	0	0.26	0.26 0.95 1.7 BSI20	18323012 18323012	
	12 1832301 8-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS BRADY GCE	II NONE NA METHOD 00	'n
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619	_	2010255 0.00 1 1	355-46-4 21 21 NG_L	U
Y	TRG	20101117	0.35		0.35	0.35 0.95 1.7 BSI20	18323012 18323012	
183230		2	Υ	,	0.55	0.55 0.55 1.7 150120	10323012	
	3-14-D-1405N62		BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS BRADY GCE	II NONE NA METHOD 00	0
W	UNK	20181119	15:00:00 20181127	00:26:00 9903619	_	2010255 0.00 1 1	1763-23-1 44 44 NG_L	-
	-					-	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	

Y TRG	0.43	8	0.43	0.43 1.0 1.7	BSI20	18323012	18323012	
18323012 18323012	Υ Υ	,	0.43	0.43 1.0 1.7	D5120	10323012	10323012	
N62473-14-D-1405N6247317F4100	BARSTOW_MCLB	OU1-NRF-1-01	537_MOD	EUROFINS	BRADY GCE	II NONE	NA METHO	D 000
W UNK 20181119	15:00:00 20181127	00:26:00 9903619		2010255 0.00		2991-50		NG L
U N TRG	13.00.00 20101127	0.87	2010112)	0.87	0.87 2.1 2.6		18323012	110_2
18323012 18323012 18323012	Y	0.07		0.07	0.07 2.1 2.0	D5120	10323012	
N62473-14-D-1405N6247317F4100	BARSTOW MCLB	OU1-NRF-1-01	537 MOD	EUROFINS	BRADY GCE	II NONE	NA METHO	D 000
W UNK 20181119	15:00:00 20181127	00:26:00 9903619	_	2010255 0.00		2355-31		NG L
U N TRG	13.00.00 20101127	0.87	2010112)	0.87	0.87 2.1 2.6		18323012	TTO_E
18323012 18323012 18323012	Y	0.07		0.07	0.07 2.1 2.0	D5120	10323012	
SAMPLE_NAME CONTRACT_ID DC		ASE INSTALLAT	ION ID SIT	E NAME LO	CATION NAM	IE SPECIM	MEN NAME	
BIOLOGICAL CLASS SEX AGE CLASS								IPMENT
PROJECT_PHASE COMPOSITE WATER								
START DEPTH END DEPTH DEPTH								
TRIP_BLANK SAMPLE_NARRATIN		1121/10 (22_2111			2011112111		01102_22111	•
OU1-NNE-14-01 <<< CONTRACT ID		CTO Number NEF	EDED >>>	BARSTOW	MCLB 0000	00 NNE-14	-01	
WG N N 20181114	09:00:00							
	_ID NEEDED >>> <<<	DO CTO Number	· NEEDED >>	> BARSTO	OW_MCLB	00000 NN	IE-14-W-01	
W BLK N 2018111					- · · <u>-</u>			
OU1-NNE-14-W-02 <<< CONTRACT	_ID NEEDED >>> <<<	DO CTO Number	· NEEDED >>	> BARSTO	OW_MCLB	00000 NN	IE-14-W-02	
W BLK N 2018111					_			
OU1-NNE-17-01 <<< CONTRACT_ID	NEEDED >>> <<< DO	CTO Number NEI	EDED >>>	BARSTOW	MCLB 0000	00 NNE-17	'-01	
WG N N 20181114	11:14:00	_		_				
	_ID NEEDED >>> <<<	DO_CTO_Number	NEEDED >>	> BARSTO	OW_MCLB	00000 9N	1W12L05-01	
WG N N 20181114	12:36:00							
OU1-NEP-2-01 <<< CONTRACT_ID	NEEDED >>> <<< DO_	_CTO_Number NEI	EDED >>>	BARSTOW_	MCLB 0000	00 NEP-2-0	01	
WG N N 20181114	14:30:00							
OU1-NRF-1-01 <<< CONTRACT_ID	NEEDED >>> <<< DO_	_CTO_Number NEI	EDED >>>	BARSTOW_	MCLB 0000	00 NRF-1-0	01	
WG N N 20181114	16:25:00							
OU1-NRF-1-01MS <<< CONTRACT_ID		_CTO_Number NEI	EDED >>>	BARSTOW_	MCLB 0000	00 NRF-1-0	01MS	
OU1-NRF-1-01 WG MS N		25:00						
OU1-NRF-1-01MSD <<< CONTRACT			: NEEDED >>>	> BARSTO	OW_MCLB	00000 NR	F-1-01MSD	
OU1-NRF-1-01 WG SD N		25:00						
-	NEEDED >>> <<< DO_	_CTO_Number NEF	EDED >>>	BARSTOW_	MCLB 0000	00		
W LB N								
LCS18323012 <<< CONTRACT_ID NEED	DED >>> <<< DO_CTC	D_Number NEEDEI	O >>> BA	RSTOW_MCL	B 00000			W
BS N								

Guiterrez Canales Engineering, P.C. 2655 Camino del Rio North, Suite 100 San Diego, CA 92108 ATTN: Mr. Jesse MacNeill

February 5, 2019

SUBJECT: REVISED Barstow Site Inspection, Data Validation

Dear Mr. MacNeill

Enclosed are the revised validation reports for the fraction listed below. These SDGs were received on January 10, 2019. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project #44154_RV1:

SDG # Fraction

BSI20/2010255, BSI21/2010258 BSI22/2012436, BSI23/2014748 BSI24/2015917, BSI27/2017387 SBI22/2011587, SBI23/2011591 Perfluoroalkyl & Polyfluoroalkyl Substances

The data validation was performed under Stage 2B & 4 guidelines. The analyses were validated using the following documents, as applicable to each method:

- Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA; October 2018
- U.S. Department of Defense Quality Systems Manual for Environmental Laboratories, Version 5.1; 2017
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review;
 January 2017

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng

pgeng@lab-data.com

Project Manager/Senior Chemist

Attachment 1 11,274 pages-ADV LDC #44154 (Guiterrez Canales Engineering, P.C. - San Diego, CA / Barstow) 80/20 - NEDD - 2B/4 (3) DATE DATE PFAs LDC SDG# REC'D DUE (537M) w s w s w s w w s w s w s w S w s w s w s w s ws W S Matrix: Water/Soil 01/10/19 01/30/19 BSI20/2010255 01/10/19 01/30/19 10 0 BSI21/2010258 BSI22/2012436 01/10/19 01/30/19 BSI23/2014748 01/10/19 01/30/19 BSI24/2015917 01/10/19 01/30/19 0 BSI27/2017387 01/10/19 01/30/19 12 0 G SBI22/2011587 01/10/19 01/30/19 17 0 01/10/19 01/30/19 10 SBI23/2011591 J/PG

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 4

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI20/2010255

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-NNE-14-01	9903613	Water	11/14/18
OU1-NNE-14-W-01	9903614	Water	11/14/18
OU1-NNE-14-W-02	9903615	Water	11/14/18
OU1-NNE-17-01	9903616	Water	11/14/18
OU1-9N1W12L05-01	9903617	Water	11/14/18
OU1-NEP-2-01	9903618	Water	11/14/18
OU1-NRF-1-01	9903619	Water	11/14/18
OU1-NRF-1-01MS	9903620MS	Water	11/14/18
OU1-NRF-1-01MSD	9903621MSD	Water	11/14/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample OU1-NNE-14-W-01 was identified as an equipment blank. No contaminants were found.

Sample OU1-NNE-14-W-02 was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
OU1-NRF-1-01MS/MSD (OU1-NRF-1-01)	Perfluoroundecanoic acid	-	79 (83-132)	UJ (all non-detects)	А

For OU1-NRF-1-01MS/MSD, no data were qualified for Perfluorooctanoic acid percent recoveries (%R) outside the QC limits since the parent sample results were greater than 4X the spike concentration.

Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits with the following exceptions:

Sample	Labeled Compound	%R (Limits)	Affected Compound	Flag	A or P
OU1-NNE-14-01	13C2-Perfluorododecanoic acid	35 (50-150)	Perfluorododecanoic acid Perlfuorotridecanoic acid	UJ (all non-detects) UJ (all non-detects)	Р

XI. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and labeled compound %R, data were qualified as estimated in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Barstow Site Inspection Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG BSI20/2010255

Sample	Compound	Flag	A or P	Reason
OU1-NRF-1-01	Perfluoroundecanoic acid	UJ (all non-detects)	A	Matrix spike/Matrix spike duplicate (%R)
OU1-NNE-14-01	Perfluorododecanoic acid Perlfuorotridecanoic acid	UJ (all non-detects) UJ (all non-detects)	Р	Labeled compounds (%R)

Barstow Site Inspection

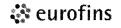
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG BSI20/2010255

No Sample Data Qualified in this SDG

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG BSI20/2010255

No Sample Data Qualified in this SDG



Analysis Report

Gutierrez Canales Engineering

GW 9903613

2010255

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LanclabsEnv

Sample Description:

OU1-NNE-14-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

11/16/2018 11:40 11/14/2018 09:00

SDG#:

BSI20-01

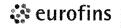
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.92	2.2	2.8	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Acid	d .			
14434	NMeFOSAA	2355-31-9	N.D.	0.92	2.2	2.8	1
	NMeFOSAA is the acronym for N-I	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	14	0.28	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	1.7 J	0.46	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D. <i>V</i>	0.46	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	14	0.37	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	83	0.37	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	54	0.46	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	1.8 J	0.37	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	36	0.46	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	58	0.46	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06 - 7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D. UJ	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1
The r	ecovery for labeled compound 13C2	-PFDoDA is outside					

of QC acceptance limits as noted on the QC Summary.

Sufficient sample was not available to repeat the analysis.

Sample Comments

		Laboi	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/26/2018 23:32	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.Eurofinst/S.com/LancLabsEnv

Sample Description:

OU1-NNE-14-W-01 Grab Water

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #:

GW 9903614 2010255

ELLE Group #: Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

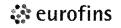
11/16/2018 11:40

Collection Date/Time: 11/14/2018 10:15 BSI20-02BL SDG#:

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	6/MS Miscellaneous EPA 53	•	ng/l	ng/l	ng/l	ng/l	
	table B						
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

		Labor	ratory :	sample Analy	sis Recora		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/26/2018 23:41	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17661 • 717-666-2300 • Fax: 717-656-6786 • www.EurofineUS.com/LancLabsEnv

Sample Description: OU1-NNE-14-W-02 Grab Water

Barstow Site Inspection

Barstow Site Inspection

GW 9903615 ELLE Sample #:

2010255 **ELLE Group #**:

Matrix: Water

Submittal Date/Time:

11/16/2018 11:40 11/14/2018 10:20

Collection Date/Time:

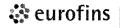
Project Name:

SDG#: BSI20-03BL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

		Labo	atory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/26/2018 23:50	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1



Project Name:

Lancaster Laboratories Environmental

Analysis Report

Gutierrez Canales Engineering

GW 9903616

2010255

ELLE Sample #:

ELLE Group #:

Matrix: Groundwater

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6786 • www.Eurofinat/S.com/LancLabsEnv

Sample Description: OU1-NNE-17-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Submittal Date/Time: 11/16/2018 11:40 Collection Date/Time: 11/14/2018 11:14

SDG#: BSI20-04

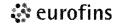
3DG#.	B5120-04						
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.96	2.3	2.9	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.96	2.3	2.9	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	16	0.29	1.1	1.9	1
14434	Perfluorodecanoic acid	335-76-2	1.2 J	0.48	1.2	1.9	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.48	1.2	1.9	1
14434	Perfluoroheptanoic acid	375-85-9	21,	0.38	1.2	1.9	1
14434	Perfluorohexanesulfonate	355-46-4	130	0.38	1.1	1.9	1
14434	Perfluorohexanoic acid	307-24-4	74	0.48	1.2	1.9	1
14434	Perfluorononanoic acid	375-95-1	1.7 J	0.38	1.2	1.9	1
14434	Perfluoro-octanesulfonate	1763-23-1	51,	0.48	1.2	1.9	1
14434	Perfluorooctanoic acid	335-67-1	99	0.48	1.2	1.9	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.58	1.2	1.9	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.58	1.2	1.9	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.48	1.2	1.9	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/26/2018 23:59	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1

1/26/19 8



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6766 • www.EurofineUS.com/LancLabsEnv

Sample Description:

OU1-9N1W12L05-01 Grab Groundwater

Barstow Site Inspection

ELLE Sample #: **ELLE Group #**:

Gutierrez Canales Engineering GW 9903617

Matrix: Groundwater

2010255

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/16/2018 11:40 11/14/2018 12:36

SDG#:

BSI20-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesi	ulfonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-I	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	5.1	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	16	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	0.87 J	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	6.1	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	0.76 J	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/27/2018 00:08	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-NEP-2-01 Grab Groundwater

Barstow Site Inspection

ELLE Sample #: **ELLE Group #**:

GW 9903618

Matrix: Groundwater

2010255

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/16/2018 11:40 11/14/2018 14:30

SDG#:

BSI20-06

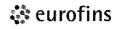
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanes:	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	20	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	0.63 J	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	11	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	69	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	97	4.5	11	18	10
14434	Perfluorononanoic acid	375-95-1	1.2 J	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	49	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	62	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/27/2018 00:17	Marissa C Drexinger	1		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/28/2018 10:24	Joshua P Trost	10		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1		

1/26/19 x



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NRF-1-01 Grab Groundwater

Barstow Site Inspection

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: SDG#: 11/16/2018 11:40 11/14/2018 16:25 BSI20-07BKG Gutierrez Canales Engineering ELLE Sample #: GW 9903619 ELLE Group #: 2010255

Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesul	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	18	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	2.2	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D. / `	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	3.0	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	21	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	7.3	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	3.8	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	44	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	23	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D. UZ	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/27/2018 00:26	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18323012	11/19/2018 15:00	Danielle D McCully	1			

1/6/19 4

LDC #: 44154A96	VALIDATION COMPLETENESS WORKSHEET
SDG #:_BSI20/2010255	Stage 2℞ →
Laboratory: Eurofins	

Date: 1/2/19
Page: 1/of 1
Reviewer: 1
2nd Reviewer: 1

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l	Sample receipt/Technical holding times	A	
11.	LC/MS Instrument performance check	*	
III.	Initial calibration/ICV	AA	RS0 < 20/6. 13 Tue/let=30/0
IV.	Continuing calibration/ISC	\triangleleft	RSO ≤ 20/0. Y? Tue/lev=30/0
V.	Laboratory Blanks	*	
VI.	Field blanks	NO	B=2, SB=2
VII.	Matrix spike/Matrix spike duplicates	W	
VIII.	Laboratory control samples		105
IX.	Field duplicates	N	
Χ	Labeled Compounds	w	
XI.	Compound quantitation RL/LOQ/LODs	A	
XII.	Target compound identification	A	
XIII.	System performance	A	
XIV.	Overall assessment of data		

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected R = Rinsate

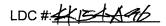
FB = Field blank

D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	OU1-NNE-14-01	9903613	Water	11/14/18
2	OU1-NNE-14-W-01	9903614	Water	11/14/18
3	OU1-NNE-14-W-02	9903615	Water	11/14/18
4	OU1-NNE-17-01	9903616	Water	11/14/18
5	OU1-9N1W12L05-01	9903617	Water	11/14/18
6	OU1-NEP-2-01	9903618	Water	11/14/18
7	OU1-NRF-1-01	9903619	Water	11/14/18
8	OU1-NRF-1-01MS	9903620MS	Water	11/14/18
9	OU1-NRF-1-01MSD	9903621MSD	Water	11/14/18
10				
11				

Note	s:			
	3×3×30/2B			



VALIDATION FINDINGS CHECKLIST

Page: / of <a> Page:

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
J. Technical holding times				The Committee of State of Stat
Were all technical holding times met?				
Was cooler temperature criteria met?				
II. LC/MS Instrument performance check				
Were the instrument performance reviewed and found to be within the validation criteria?				
Illa Initial calibration				
Did the laboratory perform a 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) ≤ 20%?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of \geq 0.990?	/			
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
IIIb. Initial Calibration Verification				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?	/			
Were all percent differences (%D) ≤ 30%?		-		
IV. Continuing calibration				
Was a continuing calibration analyzed daily?				
Were all percent differences (%D) of the continuing calibration ≤ 30%?			ļ	
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?				
V. Laboratory Blanks	T T			STREET, STREET
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed for each matrix and concentration?				
Was there contamination in the laboratory blanks?				
VI. Field blanks	ı			
Were field blanks identified in this SDG?				
Were target compounds detected in the field blanks?		\		
VIII. Matrix spike/Matrix spike duplicates			1000	
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?				
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?		/		
IX. Laboratory control samples		_		
Was an LCS analyzed per extraction batch for this SDG?				



VALIDATION FINDINGS CHECKLIST

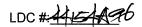
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	Γ		Ī	
Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X. Field duplicates				
Were field duplicate pairs identified in this SDG?				
Were target compounds detected in the field duplicates?				
XI. Labeled compounds			_	The second secon
Were labeled compound percent recoveries (%R) within the QC limits?				
XIII Compound quantitation				
Did the laboratory reporting limits (RL) meet the QAPP RLs?				
Did reported results include both branched and linear isomers?				
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?		,	76.1	
XIII. Target compound identification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?				
XIV. System performance		. m		The state of the s
System performance was found to be acceptable.				
XIII. Overall assessment of data				
Overall assessment of data was found to be acceptable.				

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

METHOD: PFOS/PFOAS		
A. NEtFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Page: / of / Reviewer: 2nd Reviewer: V4

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

<u>**V**N N/A</u> Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

I (⋈/A) Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

Ė	N (M/A/	vvere all duplicate sa	imple relative	percent unierences (RPD) or differences v	vicinii QC infints :		
#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		2/9	*R	()	T9 (83-132)	()	T(NO)	JUV/D
			.N.	()	15T (76-136)	()		No Rual >4>
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VALIDATION FINDINGS WORKSHEET Labeled Compounds

Page:_	_/_of/
Reviewer:	9
2nd Reviewer:	54

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N N/A Were all labeled compound recoveries within the QC criteria?

IN N/A	Were all labeled compound rec	Loveries within the QC criteria?			
# Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:	_)	Qualifications
	1 (ND)	13CO-PFDODA	35 (50-	150)	VUI ((, Q)
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VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

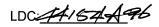
Page: / of Reviewwe: 2nd Reviewer: ________

Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X) Area
	<u></u>	Otandard		
11/26/2018	PFOA	1	0.040	0.0410393
		2	0.120	0.1035112
		3	0.400	0.4268136
		4	1.600	1.4766669
		5	4.000	3.8556006
		6	10.000	8.9604514
		7	20.000	17.4262605

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.87925184	0.892990
Correlation Coefficient	0.999777	0.99927
Coefficient of Determination (r^2)	0.999555	



VALIDATION FINDINGS WORKSHEET Initial Calibration Calculation Verification

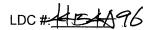
Page: of A Reviewwe: 2nd Reviewer: 504

Method: PFACs (EPA Method 537)

Calibration			(Y)	(X)
Date	Analyte	Standard	Concentration	Area
11/26/2018	PFOS	1	0.039	0.0433728
		2	0.116	0.1149304
		3	0.387	0.4449716
		4	1.548	1.5784137
		5	3.870	4.3035052
		6	9.686	10.5549627
		7	19.372	22.0735376

Linear through the origin

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.12840566	1.116930
Correlation Coefficient	0.999823	0.99961
Coefficient of Determination (r^2)	0.999647	



 $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	
Reviewer:	
nd Raviewer	De

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

 A_x = Area of compound, $C_x = Concentration of compound,$ A_{is} = Area of associated internal standard C_{is} = Concentration of internal standard

Reported Recalculated Reported Recalculated Calibration Compound (Reference Internal Standard) Average **RRF RRF** %D %D RRF (initial) Standard ID (CC) (CC) 2,38 200 acks. Ch2 (1st internal standard) 2.38 1.85 .97 IAT (2nd internal standard) (3rd internalstandard) 2 0013-CALA 11/26/18 8.00 9.02 (1st internal standard) T.40 (2nd internal standard) (3rd internalstandard) 3 (1st internal standard) (2nd internal standard) (3rd internalstandard) (1st internal standard) (2nd internal standard) (3rd internalstandard)

Comments:	Refer to Continuing Calibration findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the
recalculated i	esults

VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates Results Verification

Page:_	Lot
Reviewer:_	7
2nd Reviewer:	DU

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference	(RPD) of the matrix spike and matrix spike duplicate	were recalculated for the compounds identified below
using the following calculation:	Section 1995	· · ·

% Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked sample concentration SA = Spike added

SC = Sample concentation

RPD = I MSC - MSC | * 2/(MSC + MSDC)

MSC = Matrix spike concentration

MSDC = Matrix spike duplicate concentration

MS/MSD samples: ____

Compound	Add	ike ded 5 /—)	Sample Concentration	Concer	Sample ntration	Matrix Spike Percent Recovery								Matrix Spike Duplicate Percent Recovery		MS/MSD RPD	
	MS	MSD		MS	MSD	Reported	Recalc	Reported	Recalc	Reported	Recalculated						
DFOA	ATT	484	<i>23,3</i> 3	29.72	30.95	134	134	157	+0157	4	4						
JF05	\$4.56		43.5	48.	4858	102	100	109	109	//	1 .						

							1										

Comments: Refer to Matrix Spike/Matrix Spike Duplicates findings worksheet for list of qualifications and associated samples when reported resul	<u>lts do not agree within 10.0%</u>
of the recalculated results.	

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_	/ of /
Reviewer:_	
2nd Reviewer:	04

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration

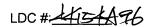
SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCS/LCSD samples: LCS 3=301=12

Compound	Sp Ad (N=	oike ded 5 / ()	Sp Conce (U	oike ntration		Recovery		SD Recovery		LCSD PD
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
₽FOX	5.44	NX	5.31	NÅ	98	<i>a</i> 8				
7705	5.20	V	3,79	i	73	73				
	·									,
										·
					·					
		<u> </u>								
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Comments: Refer to Laboratory Control Sample/Laboratory Control Sample Duplicates findings worksheet for list of qualifications and associated samples when re	portec
results do not agree within 10.0% of the recalculated results.	



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VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Page:	_/of_/
Reviewer:	9
2nd reviewer:_	N

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Factor of 2 to account for GPC cleanup

<u>Y N N/A</u>	Were all reported results recalculated and verified for all level IV samples?
Y N N/A	Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Conce	entratio	on = $(A_{\nu})(I_{\nu})(V_{\nu})(DF)(2.0)$ $(A_{\nu})(RRF)(V_{\nu})(V_{\nu})(\%S)$	Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D, FOA:
A _{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	$-\infty$ $+\infty$
l _s	=	Amount of internal standard added in nanograms (ng)	Conc. = (28/190.)(5.)()()()()()
V _o	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	(4021: 0.07211 0.19)
V _i	=	Volume of extract injected in microliters (ul)	= ST. () N& (
V _t	=	Volume of the concentrated extract in microliters (ul)	12/2
Df	=	Dilution Factor.	/
%S	=	Percent solids, applicable to soil and solid matrices	

#	Sample ID		Reported Concentration	Calculated Concentration	Qualification
-	Sample 10	Compound	1-74		Qualification
L		Compound + Compound	58		
		,			
L			<u> </u>		
l					
-				<u> </u>	
ļ					
 			 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI21/2010258

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-GW-10-01	9903630	Water	11/13/18
OU1-GW-10-W-01	9903633	Water	11/13/18
OU1-GW-10-W-02	9903634	Water	11/13/18
OU1-MW-A-01	9903635	Water	11/13/18
OU1-MW-A-02	9903636	Water	11/13/18
OU1-NPZ-16-01	9903637	Water	11/13/18
OU1-NPZ-8-01	9903638	Water	11/13/18
OU1-NPZ-7-01	9903639	Water	11/13/18
OU1-NWP-6-01	9903640	Water	11/13/18
OU1-NWP-6-02	9903641	Water	11/13/18
OU1-GW-10-01MS	9903631MS	Water	11/13/18
OU1-GW-10-01MSD	9903632MSD	Water	11/13/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample OU1-GW-10-W-01 was identified as an equipment blank. No contaminants were found.

Sample OU1-GW-10-W-02 was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. For OU1-GW-10-01MS/MSD, no data were qualified for percent recoveries (%R) and relative percent differences (RPD) outside the QC limits since the MS/MSD was analyzed at greater than or equal to a 5X dilution.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples OU1-MW-A-01 and OU1-MW-A-02 and samples OU1-NWP-6-01 and OU1-NWP-6-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	OU1-MW-A-01	OU1-MW-A-02	RPD (Limits)	Flag	A or P
NEtFOSAA	2.6	2.8	7 (≤30)	-	-
NMeFOSAA	1.5	1.3	14 (≤30)	-	_
Perfluorobutanesulfonate	17	18	6 (≤30)	-	-
Perfluorodecanoic acid	4.9	4.7	4 (≤30)	-	-
Perfluoroheptanoic acid	2.4	2.4	0 (≤30)	-	-
Perfluorohexanesulfonate	15	15	0 (≤30)	-	-
Perfluorohexanoic acid	6.7	6.4	5 (≤30)	-	-
Perfluorononanoic acid	4.0	4.2	5 (≤30)	-	-
Perfluoro-octanesulfonate	47	53	12 (≤30)	-	-
Perfluorooctanoic acid	22	22	0 (≤30)	-	-

	Concentrat	Concentration (ng/L)			
Compound	OU1-NWP-6-01	OU1-NWP-6-02	RPD (Limits)	Flag	A or P
NEtFOSAA	1.0	1.3	26 (≤30)	-	-
Perfluorobutanesulfonate	19	24	23 (≤30)	-	-
Perfluorodecanoic acid	4.7	5.4	14 (≤30)	-	-
Perfluoroheptanoic acid	2.9	3.6	22 (≤30)	-	-
Perfluorohexanesulfonate	21	25	17 (≤30)	-	-
Perfluorohexanoic acid	6.7	7.9	16 (≤30)	-	-
Perfluorononanoic acid	6.1	6.8	11 (≤30)	-	-
Perfluoro-octanesulfonate	79	94	17 (≤30)	-	_
Perfluorooctanoic acid	27	33	20 (≤30)	-	-

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG
BSI21/2010258

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification
Summary - SDG BSI21/2010258

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification
Summary - SDG BSI21/2010258

No Sample Data Qualified in this SDG



Analysis Report

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2390 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-GW-10-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

SDG#:

11/16/2018 11:40 11/13/2018 09:00 BSI21-01BKG Gutierrez Canales Engineering ELLE Sample #: GW 9903630 ELLE Group #: 2010258

Matrix: Groundwater

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	8.8	21	27	10
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ulfonamidoacetic Ad	cid.			
14434	NMeFOSAA	2355-31-9	N.D.	8.8	21	27	10
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	6,400	27	97	180	100
14434	Perfluorodecanoic acid	335-76-2	N.D.	4.4	11	18	10
14434	Perfluorododecanoic acid	307-55-1	N.D.	4.4	11	18	10
14434	Perfluoroheptanoic acid	375-85-9	2,000	35	110	180	100
14434	Perfluorohexanesulfonate	355-46-4	6,400	35	97	180	100
14434	Perfluorohexanoic acid	307-24-4	32,000	440	1,100	1,800	1000
14434	Perfluorononanoic acid	375-95-1	N.D.	3.5	11	18	10
14434	Perfluoro-octanesulfonate	1763-23-1	31	4.4	11	18	10
14434	Perfluorooctanoic acid	335-67-1	1,500	4.4	11	18	10
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	5.3	11	18	10
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	5.3	11	18	10
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	4.4	11	18	10
The	recovery for labeled compound used	as extraction standard	t				

13C5-PFHxA is outside of QC acceptance limits as noted on the QC Summary. The recovery for labeled compound used as extraction standard 13C5-PFHxA is also outside of QC acceptance limits in the associated matrix spike and duplicate samples, indicating a matrix effect.

Reporting limits were raised due to interference from the sample matrix.

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/28/2018 10:42	Joshua P Trost	10	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/28/2018 10:51	Joshua P Trost	100	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/28/2018 12:16	Joshua P Trost	1000	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1	1	18324013	11/20/2018 16:00	Anthony C Polaski	1	

*=This limit was used in the evaluation of the final result



Analysis Report

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Sample Description:

OU1-GW-10-W-01 Grab Water

Barstow Site Inspection

ELLE Sample #: **ELLE Group #:**

Gutierrez Canales Engineering GW 9903633 2010258

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/16/2018 11:40 11/13/2018 09:15

Collection Date/Time: SDG#: BSI21-02BL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	fonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 13:37	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1				



Analysis Report

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Sample Description:

OU1-GW-10-W-02 Grab Water

Barstow Site Inspection

ELLE Sample #: ELLE Group #:

Matrix: Water

Gutierrez Canales Engineering GW 9903634 2010258

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

SDG#:

BSI21-03BL

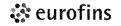
11/16/2018 11:40 11/13/2018 09:20

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 5: table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.84	2.0	2.5	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.84	2.0	2.5	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.25	0.93	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.42	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.42	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.34	0.93	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.42	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.42	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.42	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.42	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 13:46	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1			



Analysis Report

Gutierrez Canales Engineering

GW 9903635

2010258

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

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Sample Description:

OU1-MW-A-01 Grab Groundwater

Barstow Site Inspection

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/16/2018 11:40 11/13/2018 10:44

SDG#:

BSI21-04

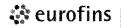
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 53/ table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	2.6	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	1.5 J	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	17	0.26	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	4.9	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	2.4	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	15	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	6.7	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	4.0	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	47	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	22	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 13:55	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1				

1/26/19 X



Analysis Report

Gutierrez Canales Engineering

ELLE Sample #: ELLE Group #:

Matrix: Groundwater

GW 9903636

2010258

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Sample Description:

OU1-MW-A-02 Grab Groundwater

Barstow Site Inspection

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/16/2018 11:40 11/13/2018 10:45

SDG#:

BSI21-05

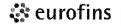
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	2.8	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	1.3 J	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic /	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	18	0.27	0.98	1.8	1
4434	Perfluorodecanoic acid	335-76-2	4.7	0.44	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	2.4	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	15	0.36	0.98	1.8	1
4434	Perfluorohexanoic acid	307-24-4	6.4	0.44	1.1	1.8	1
4434	Perfluorononanoic acid	375-95-1	4.2	0.36	1.1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	53	0.44	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	22	0.44	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:04	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1			

1/26/19 8



Analysis Report

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Sample Description:

OU1-NPZ-16-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #:

GW 9903637

ELLE Group #:

2010258 Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/16/2018 11:40 11/13/2018 12:13

SDG#:

BSI21-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 5		ng/l	ng/l	ng/l	ng/l	
	table E						
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	24	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	4.0	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	1.8	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	18	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	4.6	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	4.7	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	50	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	24	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:13	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1			

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Analysis Report

Gutierrez Canales Engineering

GW 9903638

2010258

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17801 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-NPZ-8-01 Grab Groundwater

Barstow Site Inspection

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/16/2018 11:40 11/13/2018 13:34

SDG#:

BSI21-07

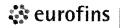
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesi	ulfonamidoacetic Aci	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	19	0.26	0.96	1.7	1
4434	Perfluorodecanoic acid	335-76-2	2.6	0.43	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
4434	Perfluoroheptanoic acid	375-85-9	3.1	0.35	1.0	1.7	1
4434	Perfluorohexanesulfonate	355-46-4	15	0.35	0.96	1.7	1
4434	Perfluorohexanoic acid	307-24-4	6.3	0.43	1.0	1.7	1
4434	Perfluorononanoic acid	375-95-1	4.3	0.35	1.0	1.7	1
4434	Perfluoro-octanesulfonate	1763-23-1	47	0.43	1.0	1.7	1
4434	Perfluorooctanoic acid	335-67-1	24	0.43	1.0	1.7	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:22	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1				

1/6/19 ×



Analysis Report

Gutierrez Canales Engineering

GW 9903639

2010258

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NPZ-7-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

11/16/2018 11:40 11/13/2018 15:01

SDG#:

BSI21-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table E	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	6.9	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	4.4	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	46	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	26	0.44	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	4.9	0.44	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	41	0.44	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:31	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1			

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Submittal Date/Time:

Lancaster Laboratories Environmental

11/16/2018 11:40

Analysis Report

Gutierrez Canales Engineering

ELLE Sample #:

GW 9903640

2010258

2425 New Holland Pike, Lancaster, PA 17661 • 717-666-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

OU1-NWP-6-01 Grab Groundwater Sample Description:

Barstow Site Inspection

ELLE Group #: **Barstow Site Inspection** Matrix: Groundwater

Project Name:

Collection Date/Time: 11/13/2018 16:36

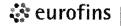
SDG#: BSI21-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	1.0 J	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	ethyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	19	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	4.7	0.44	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	2.9	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	21	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	6.7	0.44	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	6.1	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	79	0.44	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	27	0.44	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:40	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1			



Analysis Report

Gutierrez Canales Engineering

GW 9903641

2010258

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurolinsUS.com/LancLabsEnv

Sample Description: OU1-NWP-6-02 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Submittal Date/Time: 11/16/20 Collection Date/Time: 11/13/20

11/16/2018 11:40 11/13/2018 16:37

SDG#:

Project Name:

BSI21-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	1.3 J	0.85	2.0	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.85	2.0	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	24	0.26	0.94	1.7	1
14434	Perfluorodecanoic acid	335-76-2	5.4	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	3.6	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	25	0.34	0.94	1.7	1
14434	Perfluorohexanoic acid	307-24-4	7.9	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	6.8	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	94	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	33	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/27/2018 14:58	Marissa C Drexinger	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18324013	11/20/2018 16:00	Anthony C Polaski	1		

1/6/19 4

LDC #:_	44154B96	VAL
SDG #:	BSI21/2010258	

Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Page: /st // Page:

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	AA	\$50x20/0.4°, TWL/1CV= 30/0
IV.	Continuing calibration/ISC	₩	#50<20/0.Y', TML/1CV= 30/0 CCV/15C < 30/0
V.	Laboratory Blanks	A	/
VI.	Field blanks	NA	ZB=2.5B=3.
VII.	Matrix spike/Matrix spike duplicates	KW	2B=2.5B=3. 11/12=70+ and +D out >5x of
VIII.	Laboratory control samples	\mathbb{A}	109
IX.	Field duplicates	W)	D=4+5. 9+10
X.	Labeled Compounds	m/	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	Ŋ	
XIV.	Overall assessment of data	LA	

Note: A = A

A = Acceptable N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

FB = Field blank

R = Rinsate

D = Duplicate TB = Trip blan

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	OU1-GW-10-01	9903630	✓ Water	11/13/18
2	OU1-GW-10-W-01	9903633	Water	11/13/18
3	OU1-GW-10-W-02	9903634	Water	11/13/18
4 1	OU1-MW-A-01	9903635	Water	11/13/18
5 5	OU1-MW-A-02	9903636	Water	11/13/18
6	OU1-NPZ-16-01	9903637	Water	11/13/18
7	OU1-NPZ-8-01	9903638	Water	11/13/18
8	OU1-NPZ-7-01	9903639	Water	11/13/18
9 1	OU1-NWP-6-01	9903640	Water	11/13/18
ا 10	OU1-NWP-6-02	9903641	Water	11/13/18
11	OU1-GW-10-01MS	9903631MS /	Water	11/13/18
12	OU1-GW-10-01MSD	9903632MSD -	Water	11/13/18
13				
14				
15				

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

WIETHOD, PROSIPPOAS		
A. NEtFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		
	·	•

LDC#: 44154B96

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 1 of 1 Reviewer: PG 2nd Reviewer:_

THETHOD: LC MS PFCs (EPA Method 537-Mod)

YN NA

Were field duplicate pairs identified in this SDG?

Were target analytes detected in the field duplicate pairs?

	Concentra	tion (ng/L)		
Compound	4	5	RPD (≤30%)	Qualifications (Parent Only)
А	2.6	2.8	7	
В	1.5	1.3	14	
С	17	18	6	
F	4.9	4.7	4	
Н	2.4	2.4	0	
1	15	15	0	
J	6.7	6.4	5	
к	4.0	4.2	5	
М	47	53	12	
N	22	22	0	

	Concentra	tion (ng/L)		
Compound	9	10	RPD (≤30%)	Qualifications (Parent Only)
Α	1.0	1.3	26	
С	19	24	23	·
F	4.7	5.4	14	
Н	2.9	3.6	22	
ı	21	25	17	
J	6.7	7.9	16	
к	6.1	6.8	11	
М	79	94	17	
N	27	33	20	

LDC #: 44154B96

VALIDATION FINDINGS WORKSHEET Labeled Compounds

	Page:_	<u>/</u> of_	_/
	Reviewer:	9	_
2nd	Reviewer:	Nu	?

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y (N	<u>N/A</u> We	re all labeled compound red	coveries within the QC criteria?			
#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
			13C5-PFIXA	42	50-150	(3)9
				(^
		11 (MS)		40	9-50)	No anal
				(
	-	12 (NSD)	V	41		/
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI22/2012436

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU2N-TIM3-01	9913119	Water	11/20/18
OU1-NSP-2-01	9913120	Water	11/20/18
OU1-NS7-4-01	9913121	Water	11/21/18
OU1-NS7-4-W-01	9913122	Water	11/21/18
OU1-NS7-4-W-02	9913123	Water	11/21/18
OU1-NS7-8-01	9913124	Water	11/21/18
OU1-NS7-3-01	9913125	Water	11/21/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Sample OU1-NS7-4-W-01 was identified as an equipment blank. No contaminants were found.

Sample OU1-NS7-4-W-02 was identified as a source blank. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits with the following exceptions:

Sample	Labeled Compound	%R (Limits)	Affected Compound	Flag	A or P
OU2N-TIM3-01	13C2-Perfluorotetradecanoic acid	46 (50-150)	Perfluorotetradecanoic acid	UJ (all non-detects)	Р

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to labeled compound %R, data were qualified as estimated in one samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG BSI22/2012436

Sample	Compound	Flag	A or P	Reason
OU2N-TIM3-01	Perfluorotetradecanoic acid	UJ (all non-detects)	Р	Labeled compounds (%R)

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG BSI22/2012436

No Sample Data Qualified in this SDG

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG BSI22/2012436

No Sample Data Qualified in this SDG



Analysis Report

Gutierrez Canales Engineering

GW 9913119

2012436

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU2N-TIM3-01 Grab Groundwater

MCLB Barstow

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

SDG#:

11/27/2018 11:15 11/20/2018 12:57

BSI22-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	2.2 J	0.85	2.0	2.6	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesi	ulfonamidoacetic Ac	cid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.85	2.0	2.6	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	20	0.26	0.94	1.7	1
14434	Perfluorodecanoic acid	335-76-2	6.0	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	2.8	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	16	0.34	0.94	1.7	1
14434	Perfluorohexanoic acid	307-24-4	8.2	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	5.6	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	60	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	24	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D. Uゴ	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1
The	recovery for the labeled compound us	sed as extraction star	idards is				

The recovery for the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was reextracted outside holding time. The data is reported from the original extraction. Both sets of data are included in the data package.

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:04	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1			

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-656-6766 • www.EurotineUS.com/LanclabsEnv

Sample Description: OU1-NSP-2-01 Grab Groundwater

MCLB Barstow

Gutierrez Canales Engineering ELLE Sample #: GW 9913120

ELLE Group #: 2012436

Matrix: Groundwater

_

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/27/2018 11:15 11/20/2018 14:05

SDG#:

BSI22-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
C/MS	MS Miscellaneous EPA 5: table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.95	1.7	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
4434	Perfluoroheptanoic acid	375-85-9	N.D.	0.34	1.0	1.7	1
4434	Perfluorohexanesulfonate	355-46-4	N.D.	0.34	0.95	1.7	1
4434	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.0	1.7	1
4434	Perfluorononanoic acid	375-95-1	N.D.	0.34	1.0	1.7	1
4434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
4434	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.0	1.7	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:13	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1			

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Analysis Report

Gutierrez Canales Engineering

GW 9913121

2012436

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-856-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NS7-4-01 Grab Groundwater

MCLB Barstow

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/27/2018 11:15 11/21/2018 09:02

SDG#:

Project Name:

BSI22-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53	-	ng/l	ng/i	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesı	Ilfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	0.51 J	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	2.9	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	2.3	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	0.98 J	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	3.1	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	2.4	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	3.0	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	4.6	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	0.61 J	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:22	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1				

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Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-655-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NS7-4-W-01 Grab Water

MCLB Barstow

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

SDG#:

11/27/2018 11:15 11/21/2018 09:15 BSI22-04EB

ELLE Sample #: GW 9913122 ELLE Group #: 2012436

Matrix: Water

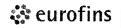
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 537 m table B-15	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-ethyl p	erfluorooctanesu	lfonamidoacetic Acid.				
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-methy	yl perfluorooctane	sulfonamidoacetic Ac	id.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:41	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1			

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-NS7-4-W-02 Grab Water

MCLB Barstow

Gutierrez Canales Engineering ELLE Sample #:

GW 9913123 2012436

ELLE Group #: Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/27/2018 11:15 11/21/2018 09:20

Collection Date/Time: SDG#:

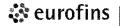
BSI22-05EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	3/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:50	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1			



Analysis Report

Gutierrez Canales Engineering

GW 9913124

2012436

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Hotland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.EurofineUS.com/LancLabsEnv

Sample Description: OU

OU1-NS7-8-01 Grab Groundwater

MCLB Barstow

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

11/27/2018 11:15 11/21/2018 11:26

SDG#:

BSI22-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	ılfonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-n	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	6.8	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	0.93 J	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	1.3 J	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	1.7 J	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	2.5	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	2.4	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	1.9	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	2.5	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 19:59	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1			

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Analysis Report

Gutierrez Canales Engineering

GW 9913125

2012436

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NS7-3-01 Grab Groundwater

MCLB Barstow

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

11/27/2018 11:15 11/21/2018 14:30

SDG#:

BSI22-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	N.D.	0.37	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.37	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.46	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.37	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.46	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.46	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	12/04/2018 20:08	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18333008	11/29/2018 15:30	Danielle D McCully	1				

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LDC #: 44154C96	VALIDATION COMPLETENESS WORKSHEET
SDG #: BSI22/2012436	Stage 2B
Laboratory: Eurofins	

Date: 1/2/19
Page: 1/2 of 1

Reviewer: 1/4
2nd Reviewer: 1/4

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
1.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	AA	\$50<20/0. Y2 True/ICV =30/0
IV.	Continuing calibration/ISC	\rightarrow	covisce 300
V.	Laboratory Blanks	A	/ •
VI.	Field blanks	ND	ZB=4. B=5.
VII.	Matrix spike/Matrix spike duplicates	N	CS
VIII.	Laboratory control samples	A	LCS/7
IX.	Field duplicates	N	,
X.	Labeled Compounds	w	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	\triangle	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	OU2N-TIM3-01	9913119	Water	11/20/18
2	OU1-NSP-2-01	9913120	Water	11/20/18
3	OU1-NS7-4-01	9913121	Water	11/21/18
4	OU1-NS7-4-W-01	9913122	Water	11/21/18
5	OU1-NS7-4-W-02	9913123	Water	11/21/18
6	OU1-NS7-8-01	9913124	Water	11/21/18
7	OU1-NS7-3-01	9913125	Water	11/21/18
8.				
9				
10				1

Note	s:		 	

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

·	

LDC # \$151096

VALIDATION FINDINGS WORKSHEET Labeled Compounds

	Page:_		\bot
	Reviewer:	<u> </u>	
2nd	Reviewer:	314	

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y/N/N/A Were all labeled compound recoveries within the OC criteria?

- 	<u>/ N/A</u> W	ere an labeled compound re	coveries within the QC criteria?	I	T
#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		100	13C2-PFTEDA	46 (50-150)	1MA (+)
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI23/2014748

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OUI-YS15-2-01	9922836	Water	11/29/18
OUI-YS15-2-W-01	9922837	Water	11/29/18
OUI-YS15-2-W-02	9922838	Water	11/29/18
OUI-YS21-3-01	9922839	Water	11/29/18
OUI-YS21-3-02	9922840	Water	11/29/18
OUI-PMW-6-01	9922841	Water	11/29/18
OUI-YS20-3-01	9922844	Water	11/29/18
OUI-YS20-3-02	9922845	Water	11/29/18
OUI-NGW01-01	9922846	Water	11/30/18
OUI-YIMW-8-01	9922847	Water	11/30/18
OUI-YIMW-8-W-01	9922850	Water	11/30/18
OUI-YIMW-8-W-02	9922851	Water	11/30/18
OUI-YIMW-6-01	9922852	Water	11/30/18
OUI-NNE-5-01	9922853	Water	11/30/18
OUI-PMW-6-01MS	9922842MS	Water	11/29/18
OUI-PMW-6-01MSD	9922843MSD	Water	11/29/18
OUI-YIMW-8-01MS	9922848MS	Water	11/30/18
OUI-YIMW-8-01MSD	9922849MSD	Water	11/30/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples OUI-YS15-2-W-01 and OUI-YIMW-8-W-01 were identified as equipment blanks. No contaminants were found.

Samples OUI-YS15-2-W-02 and OUI-YIMW-8-W-02 were identified as source blanks. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample. Percent recoveries (%R) were within QC limits with the following exceptions:

Spike ID (Associated Samples)	Compound	MS (%R) (Limits)	MSD (%R) (Limits)	Flag	A or P
OUI-YIMW-8-01MS/MSD (OUI-YIMW-8-01)	Perfluorohexanesulfonate	68 (71-130)	-	J (all detects)	А

Relative percent differences (RPD) were within QC limits.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) were analyzed as required by the method. Percent recoveries (%R) were within QC limits.

IX. Field Duplicates

Samples OUI-YS21-3-01 and OUI-YS21-3-02 and samples OUI-YS20-3-01 and OUI-YS20-3-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentration (ng/L)				
Compound	OUI-YS21-3-01	OUI-YS21-3-02	RPD (Limits)	Flag	A or P
Perfluorobutanesulfonate	2.6	2.5	4 (≤30)	-	-
Perfluoroheptanoic acid	0.55	0.53	4 (≤30)	-	-
Perfluorohexanesulfonate	12	12	0 (≤30)	-	-
Perfluorohexanoic acid	1.1	1.0	10 (≤30)	-	-
Perfluoro-octanesulfonate	14	22	44 (≤30)	J (all detects)	А
Perfluorooctanoic acid	9.4	8.6	9 (≤30)	-	-

	Concentration (ng/L)				
Compound	OUI-YS20-3-01	OUI-YS20-3-02	RPD (Limits)	Flag	A or P
Perfluorobutanesulfonate	1.3	1.4	7 (≤30)	-	-
Perfluorohexanesulfonate	5.0	5.1	2 (≤30)	-	-
Perfluorohexanoic acid	0.48	0.47	2 (≤30)	-	-
Perfluoro-octanesulfonate	3.2	3.4	6 (≤30)	-	<u>-</u>
Perfluorooctanoic acid	1.5	1.5	0 (≤30)	-	-

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to MS/MSD %R and field duplicate RPD, data were qualified as estimated in three samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Barstow Site Inspection Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG BSI23/2014748

Sample	Compound	Flag	A or P	Reason
OUI-YIMW-8-01	Perfluorohexanesulfonate	J (all detects)	A	Matrix spike/Matrix spike duplicate (%R)
OUI-YS21-3-01 OUI-YS21-3-02	Perfluoro-octanesulfonate	J (all detects)	Α	Field duplicates (RPD)

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG BSI23/2014748

No Sample Data Qualified in this SDG

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG BSI23/2014748

No Sample Data Qualified in this SDG



Analysis Report

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Sample Description: OUI-YS15-2-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering GW 9922836 ELLE Sample #:

ELLE Group #: 2014748

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/04/2018 10:00 11/29/2018 09:34

SDG#:

BSI23-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic A	Acid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacet	ic Acid.			
14434	Perfluorobutanesulfonate	375-73-5	2.8	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	9.5	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	3.3	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	27	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	0.82 J	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:10	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1			



Analysis Report

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Sample Description: OUI-YS15-2-W-01 Grab Water

Barstow PFAS Site Inspection

Gutierrez Canales Engineering GW 9922837 ELLE Sample #:

ELLE Group #: 2014748

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

12/04/2018 10:00 11/29/2018 09:50

Collection Date/Time: SDG#: BSI23-02EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 5: table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:19	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1			



Analysis Report

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Sample Description:

OUI-YS15-2-W-02 Grab Water

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9922838

ELLE Sample #: ELLE Group #:

2014748

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/29/2018 09:55

SDG#:

BSI23-03EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.85	2.0	2.5	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	ılfonamidoacetic Aci	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.85	2.0	2.5	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.25	0.93	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.42	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.42	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.34	0.93	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.42	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.42	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.42	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.42	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:28	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1			

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 + 717-656-2300 + Fax: 717-656-6766 + www.EurofinsUS.com/LancLabsEnv

Sample Description: OUI-YS21-3-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9922839 ELLE Group #: 2014748

ELLE Group #: 20147 Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/29/2018 11:49

SDG#:

BSI23-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 5: table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ilfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic.	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	2.6	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	0.55 J	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	12	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	1.1 J	0.44	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	14 J	0.44	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	9.4	0.44	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:37	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1				



Analysis Report

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Sample Description: OUI-YS21-3-02 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9922840 ELLE Group #: 2014748

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/29/2018 11:50

SDG#:

BSI23-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.92	2.2	2.8	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.92	2.2	2.8	1
	NMeFOSAA is the acronym for N-i	nethyl perfluorooctane	sulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	2.5	0.28	1.0	1.8	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	0.53 J	0.37	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	12	0.37	1.0	1.8	1
4434	Perfluorohexanoic acid	307-24-4	1.0 J	0.46	1.1	1.8	1 .
4434	Perfluorononanoic acid	375-95-1	N.D.	0.37	1.1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	22	0.46	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	8.6	0.46	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:46	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1				

Analysis Report

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Sample Description: OUI-PMW-6-01 Grab Groundwater

Barstow PFAS Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9922841 2014748

ELLE Group #:

Matrix: Groundwater

Submittal Date/Time:

Project Name:

12/04/2018 10:00

11/29/2018 13:57 Collection Date/Time: SDG#: **BSI23-06BKG**

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 537 m table B-15	od QSM 5.1	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-ethyl p	erfluorooctanesul	lfonamidoacetic Acid.				
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-methy	yl perfluorooctane	sulfonamidoacetic Ac	id.			
14434	Perfluorobutanesulfonate	375-73-5	1.3 J	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.83 J	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	7.2	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	4.1	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	2.3	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	0.93 J	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 12:55	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1				

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Project Name:

Lancaster Laboratories Environmental

Analysis Report

Gutierrez Canales Engineering

GW 9922844

ELLE Sample #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OUI-YS20-3-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Group #: 2014748 Matrix: Groundwater

Barstow Site Inspection Matrix: Groundwate

Submittal Date/Time: 12/04/2018 10:00 Collection Date/Time: 11/29/2018 16:01

SDG#: BSI23-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	6/MS Miscellaneous EPA 5 table I		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-6	ethyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan-	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	1.3 J	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	5.0	0.35	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	0.48 J	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	3.2	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	1.5 J	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 13:05	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1			



Analysis Report

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-655-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OUI-YS20-3-02 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #: GW 9922845 ELLE Group #: 2014748

Gutierrez Canales Engineering

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/29/2018 16:02

SDG#:

BS123-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	1.4 J	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	5.1	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	0.47 J	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	3.4	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	1.5 J	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/08/2018 13:23	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18339013	12/05/2018 16:00	Anthony C Polaski	1				

Analysis Report

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LanclabsEnv

Sample Description: OUI-NGW01-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #: GW 9922846 ELLE Group #: 2014748

Gutierrez Canales Engineering

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/30/2018 10:05

SDG#:

BSI23-09

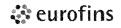
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	1.2	3.0	3.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	1.2	3.0	3.7	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctane	esulfonamidoacetic.	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	21	0.37	1.4	2.5	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.62	1.5	2.5	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.62	1.5	2.5	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.50	1.5	2.5	1
14434	Perfluorohexanesulfonate	355-46-4	18	0.50	1.4	2.5	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.62	1.5	2.5	1
14434	Perfluorononanoic acid	375-95-1	0.76 J	0.50	1.5	2.5	1
14434	Perfluoro-octanesulfonate	1763-23-1	31	0.62	1.5	2.5	1
14434	Perfluorooctanoic acid	335-67-1	5.8	0.62	1.5	2.5	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.75	1.5	2.5	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.75	1.5	2.5	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.62	1.5	2.5	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:07	Joshua P Trost	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1			

1/26/19 X



Analysis Report

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Sample Description: **OUI-YIMW-8-01 Grab Groundwater**

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9922847 **ELLE Group #**: 2014748

Matrix: Groundwater

Project Name:

Barstow Site Inspection

11/30/2018 12:23

Submittal Date/Time: 12/04/2018 10:00 Collection Date/Time: SDG#: **BSI23-10BKG**

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesu	Ifonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	1.6 J	0.27	0.99	1.8	1 .
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.41 J	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	8.1 5	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	0.62 J	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	7.1	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	4.3	0.45	1.1	1.8	. 1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:16	Joshua P Trost	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1			

Analysis Report

Gutierrez Canales Engineering

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OUI-YIMW-8-W-01 Grab Water **Sample Description:**

Barstow PFAS Site Inspection

GW 9922850 ELLE Sample #: ELLE Group #: 2014748

Matrix: Water

Project Name: Barstow Site Inspection

Collection Date/Time:

12/04/2018 10:00 11/30/2018 12:45

Submittal Date/Time: SDG#: BSI23-11EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B-		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-eth	nyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-m	ethyl perfluorooctane	esulfonamidoacetic.	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.96	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.96	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:25	Joshua P Trost	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1			

Analysis Report

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OUI-YIMW-8-W-02 Grab Water **Sample Description:**

Barstow PFAS Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #:

GW 9922851

Matrix: Water

ELLE Group #: 2014748

Submittal Date/Time:

Project Name:

12/04/2018 10:00 11/30/2018 12:50

Collection Date/Time: SDG#:

BSI23-12EB

Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
		ng/l	ng/l	ng/l	ng/l	
NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.7	1
NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.7	1
NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.97	1.8	1
Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.97	1.8	1
Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1
,	MS Miscellaneous EPA 5: table E NEtFOSAA NEtFOSAA is the acronym for N-e NMeFOSAA is the acronym for N-Perfluorobutanesulfonate Perfluorodecanoic acid Perfluorodecanoic acid Perfluoroheptanoic acid Perfluoroheptanoic acid Perfluorohexanoic acid Perfluorononanoic acid Perfluoroctanesulfonate Perfluoroctanesulfonate Perfluoroctanesulfonate Perfluoroctanoic acid Perfluorotetradecanoic acid Perfluorotetradecanoic acid	MS Miscellaneous EPA 537 mod QSM 5.1 table B-15 NEtFOSAA 2991-50-6 NEtFOSAA 2355-31-9 NMeFOSAA 2355-31-9 NMeFOSAA is the acronym for N-methyl perfluorooctanesu NMeFOSAA 375-73-5 Perfluorobutanesulfonate 375-73-5 Perfluorodecanoic acid 335-76-2 Perfluorodecanoic acid 307-55-1 Perfluoroheptanoic acid 375-85-9 Perfluorohexanesulfonate 355-46-4 Perfluorohexanoic acid 307-24-4 Perfluorononanoic acid 375-95-1 Perfluoro-octanesulfonate 1763-23-1 Perfluoroctanoic acid 335-67-1 Perfluorotetradecanoic acid 376-06-7 Perfluorotridecanoic acid 72629-94-8	Analysis Name CAS Number Result MS Miscellaneous EPA 537 mod QSM 5.1 ng/l table B-15 NEtFOSAA NEtFOSAA 2991-50-6 N.D. NEtFOSAA 2355-31-9 N.D. NMeFOSAA 2355-31-9 N.D. NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Aci NMeFOSAA 35-73-5 N.D. Perfluorobutanesulfonate 375-73-5 N.D. Perfluorodecanoic acid 307-55-1 N.D. Perfluoroheptanoic acid 375-85-9 N.D. Perfluorohexanesulfonate 355-46-4 N.D. Perfluorohexanoic acid 307-24-4 N.D. Perfluorononanoic acid 375-95-1 N.D. Perfluoro-octanesulfonate 1763-23-1 N.D. Perfluoroctanoic acid 335-67-1 N.D. Perfluorotetradecanoic acid 376-06-7 N.D. Perfluorotridecanoic acid 72629-94-8 N.D.	Analysis Name CAS Number As Received Result Detection Limit* MS Miscellaneous EPA 537 mod QSM 5.1 table B-15 ng/l ng/l ng/l NEtFOSAA 2991-50-6 N.D. 0.88 NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. N.D. 0.88 NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. Perfluorobutanesulfonate 375-73-5 N.D. 0.27 Perfluorodecanoic acid 335-76-2 N.D. 0.44 Perfluoroheptanoic acid 307-55-1 N.D. 0.35 Perfluorohexanesulfonate 355-46-4 N.D. 0.35 Perfluorohexanoic acid 307-24-4 N.D. 0.44 Perfluoro-octanesulfonate 375-95-1 N.D. 0.35 Perfluorocotanoic acid 335-67-1 N.D. 0.44 Perfluoroctanoic acid 335-67-1 N.D. 0.44 Perfluorotetradecanoic acid 376-06-7 N.D. 0.53 Perfluorotridecanoic acid 376-06-7 N.D. 0.53	Analysis Name CAS Number As Received Result Detection Limit* Limit of Detection MS Miscellaneous EPA 537 mod QSM 5.1 table B-15 ng/l ng/l ng/l ng/l NEtFOSAA 2991-50-6 N.D. 0.88 2.1 NETFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. N.D. 0.88 2.1 NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonamidoacetic Acid. N.D. 0.27 0.97 Perfluorobutanesulfonate 375-73-5 N.D. 0.27 0.97 Perfluorodecanoic acid 307-75-1 N.D. 0.44 1.1 Perfluorohetanoic acid 307-55-1 N.D. 0.35 1.1 Perfluorohexanesulfonate 355-46-4 N.D. 0.35 0.97 Perfluorohexanoic acid 307-24-4 N.D. 0.44 1.1 Perfluoro-octanesulfonate 1763-23-1 N.D. 0.44 1.1 Perfluoroctanoic acid 335-67-1 N.D. 0.44 1.1 Perfluorotetradecanoic acid 335-67-1 N.D. 0.53 </td <td>Analysis Name CAS Number As Received Result Detection Limit* Limit of Detection Limit of Detection MS Miscellaneous EPA 537 mod QSM 5.1 table B-15 ng/l ng/l ng/l ng/l NEtFOSAA 2991-50-6 N.D. 0.88 2.1 2.7 NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. N.D. 0.88 2.1 2.7 NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonate N.D. 0.88 2.1 2.7 Perfluorobutanesulfonate 375-73-5 N.D. 0.27 0.97 1.8 Perfluorodecanoic acid 335-76-2 N.D. 0.44 1.1 1.8 Perfluoroheptanoic acid 375-85-9 N.D. 0.35 1.1 1.8 Perfluorohexanesulfonate 375-86-9 N.D. 0.35 1.1 1.8 Perfluorohexanesulfonate 375-85-9 N.D. 0.35 1.1 1.8 Perfluorononanoic acid 375-85-9 N.D. 0.35 1.1 1.8 Perfluoro-octanesulfonate 1763-23-1</td>	Analysis Name CAS Number As Received Result Detection Limit* Limit of Detection Limit of Detection MS Miscellaneous EPA 537 mod QSM 5.1 table B-15 ng/l ng/l ng/l ng/l NEtFOSAA 2991-50-6 N.D. 0.88 2.1 2.7 NEtFOSAA is the acronym for N-ethyl perfluorooctanesulfonamidoacetic Acid. N.D. 0.88 2.1 2.7 NMeFOSAA is the acronym for N-methyl perfluorooctanesulfonate N.D. 0.88 2.1 2.7 Perfluorobutanesulfonate 375-73-5 N.D. 0.27 0.97 1.8 Perfluorodecanoic acid 335-76-2 N.D. 0.44 1.1 1.8 Perfluoroheptanoic acid 375-85-9 N.D. 0.35 1.1 1.8 Perfluorohexanesulfonate 375-86-9 N.D. 0.35 1.1 1.8 Perfluorohexanesulfonate 375-85-9 N.D. 0.35 1.1 1.8 Perfluorononanoic acid 375-85-9 N.D. 0.35 1.1 1.8 Perfluoro-octanesulfonate 1763-23-1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:34	Joshua P Trost	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1			

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OUI-YIMW-6-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9922852
ELLE Group #: 2014748

Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/30/2018 14:35

SDG#:

BSI23-13

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	2.0	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	0.70 J	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	9.4	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	1.7 J	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	0.71 J	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	12	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	7.5	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:43	Joshua P Trost	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1	

Analysis Report

Gutierrez Canales Engineering

GW 9922853

2014748

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

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Sample Description: OUI-NNE-5-01 Grab Groundwater

Barstow PFAS Site Inspection

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:00 11/30/2018 16:05

SDG#:

BSI23-14

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	i/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	25	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	6.2	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	22	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	92	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	0.67 J	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	23	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	19	0.45	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/10/2018 23:52	Joshua P Trost	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18340014	12/06/2018 16:00	Anthony C Polaski	1

1/4/19 8

LDC #: 44154D96 SDG #: BSI23/2014748

Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET

Stage 2B

Date: <u>//4/1</u> 9	
Page://bf/>	_
Reviewer:	
2nd Reviewer:	

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	A	
11.	LC/MS Instrument performance check	A	
111.	Initial calibration/ICV	AA	230 < 20/0. Y2. True/1€1 < 30/0
IV.	Continuing calibration/ISC	A	cox 1150 < 30/4
V.	Laboratory Blanks	V	1 2
VI.	Field blanks	ND	B-2,112 SD=3.12
VII.	Matrix spike/Matrix spike duplicates	aw	
VIII.	Laboratory control samples	A	100
IX.	Field duplicates	M	D=4+5. T+8 1
Χ.	Labeled Compounds	A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

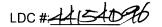
Matrix Date Client ID Lab ID OUI-YS15-2-01 9922836 Water 11/29/18 9922837 Water 11/29/18 OUI-YS15-2-W-01 Water 11/29/18 OUI-YS15-2-W-02 9922838 11/29/18 OUI-YS21-3-01 9922839 Water OUI-YS21-3-02 9922840 Water 11/29/18 Water 11/29/18 6 **OUI-PMW-6-01** 9922841 OUI-YS20-3-01 9922844 Water 11/29/18 8 11/29/18 OUI-YS20-3-02 9922845 Water OUI-NGW01-01 9922846 Water 11/30/18 10 OUI-YIMW-8 V-01 9922847 Water 11/30/18 OUI-YI<u>MW-8-W-01</u> Water 11/30/18 11 9922850 12 OUI-YIMW-8-W-02 9922851 Water 11/30/18 9922852 11/30/18 Water 13 OUI-YIMW-6-01 9922853 Water 11/30/18 14 OUI-NNE-5-01 9922842MS Water 11/29/18 OUI-PMW-6-01MS

SDG Labo	LDC #: 44154D96 VALIDATION COMPLETENESS WORKSHEET SDG #: BSI23/2014748 Stage 2B Laboratory: Eurofins METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)					Date: ///// Page: Pof? Reviewer: Reviewer: M	
	Client ID				Lab ID	Matrix	Date
16	OUI-PMW-6-01MSD				9922843MSD	Water	11/29/18
17	OUI-YIMW-8-W-01MS	_			9922848MS	Water	11/30/18
18	OUI-YIMW-8-W-01MSD				9922849MSD	Water	11/30/18
19							
20							·
21							
Notes	:						

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

IVICIADO, PROSIPROAS	THE COLUMN TWO IS NOT	
A. NEtFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		



VALIDATION FINDINGS WORKSHEET Matrix Spike/Matrix Spike Duplicates

Reviewer: 10f / Carlot Reviewer: 10f / Carlot

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were a matrix spike (MS) and matrix spike duplicate (MSD) or duplicate sample analyzed for each matrix in this SDG?

Was a MS/MSD analyzed every 20 samples of each matrix?

Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?

Were all duplicate sample relative percent differences (RPD) or differences within QC limits?

#	Date	MS/MSD ID	Compound	MS %R (Limits)	MSD %R (Limits)	RPD (Limits)	Associated Samples	Qualifications
		17/18	I	68 (71-130)	()	()	10 (dets)	JAH /8
\Box		1./10		()	()	()	10 (5(0)	700
				()	()	()		
				()	()	()		
		44.44		()	()	()		
\perp				()	()	()	,	
+				()	()	()		
\dashv		17 11 11 11 11 11 11 11 11		()	()	()		
+				()	()	()		
-			1	()	()	()		
				()	()	()		
+			1	()	()	()		
\dashv				()	()	()		
+				()	()	()		
-		·		()	()	()		
				()	()	()		
\perp				()	()	()		
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				()	()	()		

LDC#: 44154D96

VALIDATION FINDINGS WORKSHEET Field Duplicates

Page: 1 of 1 Reviewer: PG

METHOD: LC MS PFCs (EPA Method 537-Mod)
YNNA Were field duplicate pairs identified in this SDG?

Y/N NA Were target analytes detected in the field duplicate pairs?

	Concentra	ation (ng/L)		
Compound	4	5	RPD (≤30%)	Qualifications (Parent Only)
С	2.6	2.5	4	
Н	0.55	0.53	4	·
ı	12	12	0	
J	1.1	1.0	10	
М	14	22	44	Jdets/A
N	9.4	8.6	9	

	Concentration (ng/L)			
Compound	7	8	RPD (≤30%)	Qualifications (Parent Only)
С	1.3	1.4	_ 7	
1	5.0	5.1	2	
J	0.48	0.47	2	
М	3.2	3.4	6	
N	1.5	1.5	0	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\44154D96.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI24/2015917

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-YEP-3-01	9927672	Water	12/04/18
OU1-YEP-3-W-01	9927673	Water	12/04/18
OU1-YEP-3-W-02	9927674	Water	12/04/18
OU1-YS35-4-01	9927675	Water	12/04/18
OU1-YCW16-4-01	9927676	Water	12/04/18
OU1-YCW16-2-01	9927677	Water	12/04/18
OU1-Y4-2-01	9927678	Water	12/05/18
OU1-Y4-2-W-01	9927679	Water	12/05/18
OU1-Y4-2-W-02	9927680	Water	12/05/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples OU1-YEP-3-W-01 and OU1-Y4-2-W-01 were identified as equipment blanks. No contaminants were found.

Samples OU1-YEP-3-W-02 and OU1-Y4-2-W-02 were identified as source blanks. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG
BSI24/2015917

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification
Summary - SDG BSI24/2015917

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification
Summary - SDG BSI24/2015917

No Sample Data Qualified in this SDG

Analysis Report

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Sample Description: OU1-YEP-3-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #: **ELLE Group #:** 2015917

Gutierrez Canales Engineering

GW 9927672

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/06/2018 10:30 12/04/2018 10:25

SDG#:

BSI24-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 5: table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesul	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	5.0	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	1.5 J	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	2.4	0.34	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	14	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	0.81 J	0.43	1.0	1.7	- 1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	· 1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 13:53	Mark Makowiecki	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	2	18348012	12/14/2018 16:00	Anthony C Polaski	1		

1/26/198



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 + 717-656-2300 + Fax: 717-656-6766 + www.EurofinsUS.com/LancLebsEnv

Sample Description: OU1-YEP-3-W-01 Grab Water

Barstow PFAS Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9927673

2015917

ELLE Group #: Matrix: Water

Submittal Date/Time:

Project Name:

SDG#:

Submittal Date/Time:
Collection Date/Time:

12/06/2018 10:30 12/04/2018 10:40 BSI24-02RB

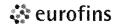
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 53/ table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	4.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 05:53	Marissa C Drexinger	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1		





Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 + 717-656-2300 + Fax: 717-656-6766 + www.EurofinsUS.com/LencLabsEnv

Sample Description: OU1-YEP-3-W-02 Grab Water

Barstow PFAS Site Inspection

Gutierrez Canales Engineering GW 9927674 ELLE Sample #: 2015917

ELLE Group #:

Matrix: Water

Project Name:

Barstow Site Inspection 12/06/2018 10:30

Submittal Date/Time: Collection Date/Time:

12/04/2018 10:45

SDG#:

BSI24-03BL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 5 table E	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	, 1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:02	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1			

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-YS35-4-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9927675
ELLE Group #: 2015917

Matrix: Groundwater

Project Name:
Submittal Date/Time:

12/06/2018 10:30

Barstow Site Inspection

Collection Date/Time:

12/04/2018 11:50

SDG#:

BSI24-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	fonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-ı	nethyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	5.4	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.54 J	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	0.60 J	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	14	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:11	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1			

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-YCW16-4-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #: GW 9927676 ELLE Group #: 2015917

Gutierrez Canales Engineering

Matrix: Group #: 20

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/06/2018 10:30 12/04/2018 13:21

SDG#:

BSI24-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 5 table E	· · · · · · · · · · · · · · · · · · ·	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.95	2.3	2.8	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ulfonamidoacetic Ad	oid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.95	2.3	2.8	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	3.9	0.28	1.0	1.9	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.47	1.1	1.9	-1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.47	1.1	1.9	1
4434	Perfluoroheptanoic acid	375-85-9	0.69 J	0.38	1.1	1.9	1
4434	Perfluorohexanesulfonate	355-46-4	N.D.	0.38	1.0	1.9	1
4434	Perfluorohexanoic acid	307-24-4	8.0	0.47	1.1	1.9	1
4434	Perfluorononanoic acid	375-95-1	N.D.	0.38	1.1	1.9	1
4434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.47	1.1	1.9	1
4434	Perfluorooctanoic acid	335-67-1	N.D.	0.47	1.1	1.9	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.57	1.1	1.9	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.57	1.1	1.9	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.47	1.1	1.9	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:20	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1				

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Analysis Report

Gutierrez Canales Engineering

GW 9927677

2015917

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-YCW16-2-01 Grab Groundwater

Barstow PFAS Site Inspection

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

12/06/2018 10:30 12/04/2018 15:04

SDG#:

BSI24-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 53	· -	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.96	2.3	2.9	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanes	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.96	2.3	2.9	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	3.3	0.29	1.1	1.9	. 1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.48	1.2	1.9	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.48	1.2	1.9	1
14434	Perfluoroheptanoic acid	375-85-9	0.77 J	0.38	1.2	1.9	1
14434	Perfluorohexanesulfonate	355-46-4	1.1 J	0.38	1.1	1.9	1
14434	Perfluorohexanoic acid	307-24-4	8.7	0.48	1.2	1.9	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.38	1.2	1.9	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.48	1.2	1.9	1
14434	Perfluorooctanoic acid	335-67-1	0.65 J	0.48	1.2	1.9	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.58	1.2	1.9	- 1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.58	1.2	1.9	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.48	1.2	1.9	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory S	Sample /	Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:29	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1

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Analysis Report

Gutierrez Canales Engineering

GW 9927678

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofineUS.com/LancLabsEm

Sample Description: OU1-Y4-2-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #: **ELLE Group #:** 2015917 Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/06/2018 10:30 12/05/2018 08:18

SDG#:

BSI24-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table E	-,	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesul	Ifonamidoacetic Acid	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	2.8	0.26	0.94	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	0.99 J	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	12	0.34	0.94	1.7	1
14434	Perfluorohexanoic acid	307-24-4	2.1	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	0.67 J	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	15	0.43	1.0	1.7	. 1
14434	Perfluorooctanoic acid	335-67-1	15	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory S	Sample	e Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:38	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-Y4-2-W-01 Grab Water

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9927679 **ELLE Group #:** 2015917

Matrix: Water

Project Name: Barstow Site Inspection

Collection Date/Time:

Submittal Date/Time: 12/06/2018 10:30 12/05/2018 08:45 BSI24-08RB SDG#:

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 53/ table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.37	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.37	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.46	1.1	1.8	. 1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.37	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.46	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.46	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 06:56	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1			



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-Y4-2-W-02 Grab Water

Barstow PFAS Site Inspection

ELLE Sample #: GW 9927680 **ELLE Group #:**

Matrix: Water

Barstow Site Inspection

2015917

Submittal Date/Time: Collection Date/Time:

Project Name:

12/06/2018 10:30

12/05/2018 08:50

SDG#:

BSI24-09BL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	ethyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1 .
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1. 1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory	Sample	: Analysis	Record
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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/11/2018 07:05	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18343003	12/09/2018 15:55	Danielle D McCully	1

LDC #: 44154E96	VALIDATION COMPLETENESS WORKSHEET
SDG #: BSI24/2015917	Stage 2B
Laboratory: Eurofins	G

Date://///
Page:_/of/_
Reviewer:_/
2nd Reviewer:_//

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	4	
III.	Initial calibration/ICV	AA	RSOX 20/0. Y , THE/ICV < 30/0
IV.	Continuing calibration/ISC	\forall	CCV/15CE 3070
V.	Laboratory Blanks	\forall	7
VI.	Field blanks	ND	ZB=2.8 SB=3,9
VII.	Matrix spike/Matrix spike duplicates	N	e 3
VIII.	Laboratory control samples	\triangleleft	105/7
IX.	Field duplicates	Λ/	
Χ.	Labeled Compounds	A	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	Ŋ	
XIV.	Overall assessment of data	12	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate
TB = Trip blank
EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	OU1-YEP-3-01	9927672	Water	12/04/18
2	OU1-YEP-3-W-01	9927673	Water	12/04/18
3	OU1-YEP-3-W-02	9927674	Water	12/04/18
4	OU1-YS35-4-01	9927675	Water	12/04/18
5	OU1-YCW16-4-01	9927676	Water	12/04/18
3	OU1-YCW16-2-01	9927677	Water	12/04/18
7	OU1-Y4-2-01	9927678	Water	12/05/18
8	OU1-Y4-2-W-01	9927679	Water	12/05/18
9	OU1-Y4-2-W-02	9927680	Water	12/05/18
10				

Note	3.	 		

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): BSI27/2017387

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-Y15-5-01	9934777	Water	12/05/18
OU1-Y9-5-01	9934778	Water	12/05/18
OU1-YS16-6-01	9934779	Water	12/06/18
OU1-YCW16-1-01	9934780	Water	12/07/18
OU1-YS16-6-W-01	9934781	Water	12/07/18
OU1-YS16-6-W-02	9934782	Water	12/07/18
OU1-YCW16-1-W-01	9934783	Water	12/07/18
OU1-YCW16-1-W-02	9934784	Water	12/07/18
OU1-YCW16-3-01	9934785	Water	12/07/18
OU1-YIMW-4-01	9934786	Water	12/07/18
OU1-PMW-2-01	9934787	Water	12/07/18
OU1-Y9-4-01	9934788	Water	12/07/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples OU1-YS16-6-W-01 and OU1-YCW16-1-W-01 were identified as equipment blanks. No contaminants were found with the following exceptions:

Blank ID	Collection Date	Compound	Concentration	Associated Samples
OU1-YCW16-1-W-01	12/07/18	Perfluorobutanesulfonate	0.41 ng/L	OU1-YCW16-1-01 OU1-YCW16-3-01 OU1-YIMW-4-01 OU1-PMW-2-01 OU1-Y9-4-01

Samples OU1-YS16-6-W-02 and OU1-YCW16-1-W-02 were identified as source blanks. No contaminants were found.

Sample concentrations were compared to concentrations detected in the field blanks. The sample concentrations were either not detected or were significantly greater (>10X for common contaminants, >5X for other contaminants) than the concentrations found in the associated field blanks with the following exceptions:

Sample	Compound	Reported Concentration	Modified Final Concentration
OU1-YCW16-1-01	Perfluorobutanesulfonate	1.8 ng/L	1.8U ng/L
OU1-YIMW-4-01	Perfluorobutanesulfonate	1.7 ng/L	1.7U ng/L

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits with the following exceptions:

Sample	Labeled Compound	%R (Limits)	Affected Compound	Flag	A or P
OU1-Y9-5-01	13C2-Perfluorotetradecanoic acid	36 (50-150)	Perfluorotetradecanoic acid	UJ (all non-detects)	Р
OU1-YIMW-4-01	13C2-Perfluorotetradecanoic acid	43 (50-150)	Perfluorotetradecanoic acid	UJ (all non-detects)	Р

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

Due to labeled compound %R, data were qualified as estimated in two samples.

Due to equipment blank contamination, data were qualified as not detected in two samples.

The quality control criteria reviewed, other than those discussed above, were met and are considered acceptable. Sample results that were found to be estimated (J) are usable for limited purposes only. Based upon the data validation all other results are considered valid and usable for all purposes.

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG BSI27/2017387

Sample	Compound	Flag	A or P	Reason
OU1-Y9-5-01 OU1-YIMW-4-01	Perfluorotetradecanoic acid	UJ (all non-detects)	Р	Labeled compounds (%R)

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG BSI27/2017387

No Sample Data Qualified in this SDG

Barstow Site Inspection

Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification Summary - SDG BSI27/2017387

Sample	Compound	Modified Final Concentration	A or P
OU1-YCW16-1-01	Perfluorobutanesulfonate	1.8U ng/L	Α
OU1-YIMW-4-01	Perfluorobutanesulfonate	1.7U ng/L	Α



Analysis Report

Gutierrez Canales Engineering

ELLE Sample #: **ELLE Group #**:

Matrix: Groundwater

GW 9934777

2017387

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-655-6766 • www.Eurofinst/S.com/LanclabsEnv

OU1-Y15-5-01 Grab Groundwater **Sample Description:**

Barstow PFAS Site Inspection

Project Name: Barstow Site Inspection

12/11/2018 10:05 Submittal Date/Time: Collection Date/Time:

12/05/2018 13:50

BSI27-01 SDG#:

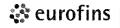
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesi	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyi perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	4.2	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	2.7	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	11	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	8.0	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	2.5	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:02	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

1/2/19



Analysis Report

Gutierrez Canales Engineering

GW 9934778

2017387

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LanclabsEnv

Sample Description: OU1-Y9-5-01 Grab Groundwater

Barstow PFAS Site Inspection

Project Name: Barstow Site Inspection

Submittal Date/Time: 12/11/2018 10:05
Collection Date/Time: 12/05/2018 17:16

SDG#: BSI27-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS/	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.1	2.7	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	2.6	0.27	0.99	1.8	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	1.3 J	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	14	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	3.4	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	0.42 J	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	13	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	14	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D. VJ	0.54	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

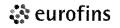
The recovery for the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was reextracted outside holding time. The data is reported from the original extraction. Both sets of data are included in the data package.

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:11	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

1/26/19 8



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-YS16-6-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9934779
ELLE Group #: 2017387

ELLE Group #: 2011 Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/11/2018 10:05 12/06/2018 16:57

SDG#:

BSI27-03

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesi	ulfonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	4.9	0.26	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	. 1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.94 J	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	0.58 J	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	15	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:29	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

1/4/19 8



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEny

Sample Description:

OU1-YCW16-1-01 Grab Groundwater

Barstow PFAS Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9934780 ELLE Group #: 2017387

ELLE Group #: 29
Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/11/2018 10:05 12/07/2018 09:03

SDG#:

BSI27-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	Ifonamidoacetic Acid	l.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic A	cid.			
14434	Perfluorobutanesulfonate	375-73-5	1.8 U	0.27	1.0	1.8	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	0.64 J	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	2.0	0.36	1.0	1.8	1
4434	Perfluorohexanoic acid	307-24-4	4.1	0.45	1.1	1.8	1
4434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	0.70 J	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:38	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6786 • www.EurofinaUS.com/LanclabsEnv

Sample Description:

OU1-YS16-6-W-01 Grab Water

Barstow PFAS Site Inspection

ELLE Sample #: ELLE Group #:

Gutierrez Canales Engineering GW 9934781 2017387

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

12/11/2018 10:05 12/07/2018 08:00 BSI27-05RB

Collection Date/Time: SDG#:

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.92	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.92	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic.	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	N.D.	0.37	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	N.D.	0.37	1.0	1.8	1
4434	Perfluorohexanoic acid	307-24-4	N.D.	0.46	1.1	1.8	1
4434	Perfluorononanoic acid	375-95-1	N.D.	0.37	1.1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.46	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	N.D.	0.46	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:47	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-YS16-6-W-02 Grab Water

Barstow PFAS Site Inspection

ELLE Sample #: ELLE Group #: Matrix: Water

GW 9934782 2017387

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

SDG#:

12/11/2018 10:05 12/07/2018 08:05 BSI27-06BL

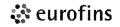
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-ei	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 14:56	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-656-6756 • www.Eurofinst/S.com/LancLabsEnv

Sample Description:

OU1-YCW16-1-W-01 Grab Water

Barstow PFAS Site Inspection

Gutierrez Canales Engineering GW 9934783

ELLE Sample #: **ELLE Group #:**

Matrix: Water

2017387

Project Name:

SDG#:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/11/2018 10:05 12/07/2018 09:30

BSI27-07RB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 53/ table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-i	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	0.41 J	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy:	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:05	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

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Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.EurofineUS.com/LancLabsEnv

Sample Description: OU1-YCW16-1-W-02 Grab Water

Barstow PFAS Site Inspection

ELLE Sample #: ELLE Group #: Matrix: Water

GW 9934784 2017387

Barstow Site Inspection

Submittal Date/Time:

Project Name:

12/11/2018 10:05

Collection Date/Time: 12/07/2018 09:35 SDG#: BSI27-08BL

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53/		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:14	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-655-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-YCW16-3-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #:

Gutierrez Canales Engineering GW 9934785

ELLE Group #: Matrix: Groundwater

2017387

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/11/2018 10:05 12/07/2018 10:29

SDG#:

BSI27-09

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	S/MS Miscellaneous EPA 5 table B	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.96	2.3	2.9	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.96	2.3	2.9	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	3.1	0.29	1.1	1.9	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.48	1.1	1.9	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.48	1.1	1.9	1
14434	Perfluoroheptanoic acid	375-85-9	2.7	0.38	1.1	1.9	1
14434	Perfluorohexanesulfonate	355-46-4	1.3 J	0.38	1.1	1.9	1
14434	Perfluorohexanoic acid	307-24-4	19	0.48	1.1	1.9	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.38	1.1	1.9	1
14434	Perfluoro-octanesulfonate	1763-23-1	0.55 J	0.48	1.1	1.9	1
14434	Perfluorooctanoic acid	335-67-1	1.1 J	0.48	1.1	1.9	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.57	1.1	1.9	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.57	1.1	1.9	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.48	1.1	1.9	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy:	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:23	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1



Analysis Report

Gutierrez Canales Engineering

GW 9934786

2017387

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-655-6766 • www.Eurofinst/S.com/LancLabsEnv

Sample Description: OU1-YIMW-4-01 Grab Groundwater

Barstow PFAS Site Inspection

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

12/11/2018 10:05 12/07/2018 12:44

SDG#: BSI27-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
77707	NEtFOSAA is the acronym for N-e				2	2.7	'
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-						•
14434	Perfluorobutanesulfonate	375-73-5	1.7 J U	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.46 J	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	9.3	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	1.1 J	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	10	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	7.1	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D. UJ	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1
The	ecovery for the labeled compound u	sed as extraction stan	dards is				

The recovery for the labeled compound used as extraction standards is outside the QC acceptance limits as noted on the QC Summary. The following corrective action was taken: The sample was reextracted outside holding time. The data is reported from the original extraction. Both sets of data are included in the data package.

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:32	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-655-6766 • www.EurofineUS.com/LancLabsEnv

Sample Description:

OU1-PMW-2-01 Grab Groundwater

Barstow PFAS Site Inspection

ELLE Sample #:

Gutierrez Canales Engineering GW 9934787 2017387

ELLE Group #:

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/11/2018 10:05 12/07/2018 14:31

SDG#:

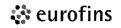
BSI27-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	6/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/i	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	ethyl perfluorooctanesu	ılfonamidoacetic A	.cid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoaceti	c Acid.			
14434	Perfluorobutanesulfonate	375-73-5	3.6	0.26	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	0.69 J	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	5.2	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	2.2	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	2.3	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	9.5	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory \$	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:41	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1



Analysis Report

Gutierrez Canales Engineering

GW 9934788

2017387

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LanclabsEnv

Sample Description:

OU1-Y9-4-01 Grab Groundwater

Barstow PFAS Site Inspection

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 12/11/2018 10:05 12/07/2018 15:57

SDG#:	BSI27-12						
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.7	1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.7	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	3.7	0.27	0.97	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	9.7	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	50	0.35	0.97	1.8	1
14434	Perfluorohexanoic acid	307-24-4	20	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	3.3	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	26	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	29	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/19/2018 15:50	Mark Makowiecki	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18348012	12/14/2018 16:00	Anthony C Polaski	1	

1/26/19 8

LDC #:	44154F96					
SDG #:	BSI27/2017387					
Laboratory: Eurofins						

VALIDATION COMPLETENESS WORKSHEET Stage 2B

Date://///
Page:__fof/
Reviewer:__/
2nd Reviewer:___//

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Sample receipt/Technical holding times	★	
II.	LC/MS Instrument performance check	A	
111.	Initial calibration/ICV	AA	100020/0.1°, True/101630/0
IV.	Continuing calibration/ISC	A	acr/18c < 30/1
V.	Laboratory Blanks	A	
VI.	Field blanks	W	6B=5.7 S=6, X
VII.	Matrix spike/Matrix spike duplicates	N	09
VIII.	Laboratory control samples	\Rightarrow	1050
IX.	Field duplicates	N.	
X.	Labeled Compounds	W	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	A	

Note: A = Acceptable

N = Not provided/applicable SW = See worksheet ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate TB = Trip blank

EB = Equipment blank

SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
	OU1-Y15-5-01	9934777	Water	12/05/18
	OU1-Y9-5-01	9934778	Water	12/05/18
	OU1-YS16-6-01	9934779	Water	12/06/18
	OU1-YCW16-1-01	9934780	Water	12/07/18
5	OU1-YS16-6-W-01	9934781	Water	12/07/18
3	OU1-YS16-6-W-02	9934782	Water	12/07/18
7	OU1-YCW16-1-W-01	9934783	Water	12/07/18
3	OU1-YCW16-1-W-02	9934784	Water	12/07/18
)	OU1-YCW16-3-01	9934785	Water	12/07/18
0	OU1-YIMW-4-01	9934786	Water	12/07/18
1	OU1-PMW-2-01	9934787	Water	12/07/18
2	OU1-Y9-4-01	9934788	Water	12/07/18
3				
4				
5				

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

MILTHOD. FF03/FF0AS		
A. NEtFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		



VALIDATION FINDINGS WORKSHEET Field Blanks

METHOD: LC/MS PFOS/PF Y N N/A Were field b V N N/A Were target	OAs (EPA Melanks identifie	ethod 537M) ed in this SDG)?	2					_,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
N N/A Were target compounds detected in the field blanks? Blank units: 15/4 Associated sample units: 15/4 Bampling date: 1 ²⁵ /7/18										
ampling date: 1 = 1000 date dample difference and date date date date date date date dat										
Field blank type: (circle one	e) Trip Blank/F	Field Blank / F	Rinsate / Othe	er: <u>28</u>	_ Asso	ciated Sampl	es: 	9-1=	2	
Compound	Blank ID				s	ample Identifica	ation			
	7	4	(0							
_	0.41	1.8/4	1.T/U							
		, ,								
Blank units: Asso Sampling date: Field blank type: (circle one	_			Associa	ted Samples:					
Compound	Blank ID				S	ample Identifica	ation			

VALIDATION FINDINGS WORKSHEET Labeled Compounds

Page:_		
Reviewer:	9	
2nd Reviewer:	NU	,

METHOD: LC/MS PFAS (EPA Method 537M)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Y N N/A Were all labeled compound recoveries within the QC criteria?

 	<u>/N/A</u> V	Tere all labeled compound rec	coveries within the QC criteria?			
#	Date	Lab ID/Reference	Internal Standard	% Recovery (Limit:)	Qualifications
		a (NO)	13co-AFTEDA	36 (3	50-150)	J/W/P (7)
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		10	V	43 (1/)	
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Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

January 22, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 2B

Laboratory:

Eurofins

Sample Delivery Group (SDG): SBI22/2011587

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-GW-9-01	9909715	Water	11/15/18
OU1-GW-9-02	9909716	Water	11/15/18
OU1-GW-9-W-01	9909717	Water	11/15/18
OU1-GW-9-W-02	9909718	Water	11/15/18
OU1-NS2-2-01	9909719	Water	11/15/18
OU1-NS2-2-02	9909720	Water	11/15/18
OU1-MW-D-01	9909721	Water	11/15/18
OU1-NNP-2-01	9909722	Water	11/15/18
OU1-NPZ-17-01	9909723	Water	11/15/18
OU1-NS2-1-01	9909724	Water	11/15/18
OU1-NSI-3-01	9909725	Water	11/16/18
OU1-NSI-3-W-01	9909726	Water	11/16/18
OU1-NSI-3-W-02	9909727	Water	11/16/18
OU1-NGW-04-01	9909728	Water	11/16/18
OU1-NGW-06-01	9909729	Water	11/16/18
OU1-MW-B-01	9909730	Water	11/16/18
OU1-NPZ-18-01	9909731	Water	11/16/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 2B data validation, which comprises an evaluation of quality control (QC) summary results.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples OU1-GW-9-W-01 and OU1-NSI-3-W-01 were identified as equipment blanks. No contaminants were found.

Samples OU1-GW-9-W-02 and OU1-NSI-3-W-02 were identified as source blanks. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

Samples OU1-MW-A-01 and OU1-MW-A-02 and samples OU1-NWP-6-01 and OU1-NWP-6-02 were identified as field duplicates. No results were detected in any of the samples with the following exceptions:

	Concentrat	tion (ng/L)			
Compound	OU1-MW-A-01	OU1-MW-A-02	RPD (Limits)	Flag	A or P
Perfluorobutanesulfonate	16	15	6 (≤30)	-	-
Perfluorodecanoic acid	2.7	2.8	4 (≤30)	-	-
Perfluoroheptanoic acid	5.6	5.4	4 (≤30)	-	-
Perfluorohexanesulfonate	18	17	6 (≤30)	-	-
Perfluorohexanoic acid	18	16	12 (≤30)	-	-
Perfluorononanoic acid	5.3	4.7	12 (≤30)	-	-
Perfluoro-octanesulfonate	54	53	2 (≤30)	-	-
Perfluorooctanoic acid	23	23	0 (≤30)	-	-

	Concentration (ng/L)				
Compound	OU1-NWP-6-01	OU1-NWP-6-02	RPD (Limits)	Flag	A or P
Perfluorobutanesulfonate	26	25	4 (≤30)	-	-
Perfluorodecanoic acid	1.7	1.7	0 (≤30)	-	-

	Concentrat	tion (ng/L)			
Compound	OU1-NWP-6-01	OU1-NWP-6-02	RPD (Limits)	Flag	A or P
Perfluoroheptanoic acid	4.6	4.7	2 (≤30)	-	-
Perfluorohexanesulfonate	33	33	0 (≤30)	-	-
Perfluorohexanoic acid	13	14	7 (≤30)	-	-
Perfluorononanoic acid	3.6	3.8	5 (≤30)	-	-
Perfluoro-octanesulfonate	51	50	2 (≤30)	-	-
Perfluorooctanoic acid	52	53	2 (≤30)	-	-

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

Raw data were not reviewed for Stage 2B validation.

XII. Target Compound Identifications

Raw data were not reviewed for Stage 2B validation.

XIII. System Performance

Raw data were not reviewed for Stage 2B validation.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG
SBI22/2011587

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification
Summary - SDG SBI22/2011587

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification
Summary - SDG SBI22/2011587

No Sample Data Qualified in this SDG



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-655-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-GW-9-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9909715 2011587

ELLE Group #:

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/21/2018 11:00 11/15/2018 08:13

SDG#:

SBI22-01

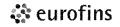
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 5		ng/l	ng/l	ng/l	ng/l	
	table E						
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	16	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	2.7	0.44	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	5.6	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	18	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	18	0.44	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	5.3	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	54	0.44	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	23	0.44	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor				
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:03	Marissa C Drexinger	1				
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1				

1/24/19



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinaUS.com/LancLabsEnv

Sample Description:

OU1-GW-9-02 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9909716

ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

Barstow Site Inspection

table B-15

EPA 537 mod QSM 5.1 1

Submittal Date/Time: Collection Date/Time: 11/21/2018 11:00 11/15/2018 08:14

SDG#:

SBI22-02

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	15	0.27	0.99	1.8	1
4434	Perfluorodecanoic acid	335-76-2	2.8	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	5.4	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	17	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	16	0.45	1.1	1.8	1
4434	Perfluorononanoic acid	375-95-1	4.7	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	53	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	23	0.45	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

Laboratory Sample Analysis Record

18330012

CA ELAP Lab Certification No. 2792

Analysis Name

PFAS in Water by

LC/MS/MS-DoD

14465 PFAS Water Prep - DoD

CAT 14434

		·	-10 110001.0		
Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:12	Marissa C Drexinger	1

11/26/2018 16:00

1/26/19 4

Anthony C Polaski



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-GW-9-W-01 Grab Water

Barstow Site Inspection

Gutierrez Canales Engineering GW 9909717 ELLE Sample #:

ELLE Group #:

2011587

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/21/2018 11:00

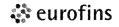
SDG#:	SBI22-03EB
Collection Date/Time:	11/15/2018 08:35
Submittal Date/ fille.	11/21/2010 11.00

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 537 n table B-15		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-ethyl	perfluorooctanesu	fonamidoacetic Acid.				
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-meth	yl perfluorooctane	sulfonamidoacetic Ac	id.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1 ,
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor					
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:21	Marissa C Drexinger	1					
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1					



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofineUS.com/LancLab9Env

Sample Description:

OU1-GW-9-W-02 Grab Water

Barstow Site Inspection

Gutierrez Canales Engineering GW 9909718 ELLE Sample #:

ELLE Group #:

2011587

Matrix: Water

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/21/2018 11:00 11/15/2018 08:40 SBI22-04EB

Collection Date/Time: SDG#:

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 5	37 mod QSM 5.1	ng/l	ng/l	ng/l	ng/l	
	table E	B-15					
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic.	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:30	Marissa C Drexinger	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1	



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 + 717-656-2300 + Fax: 717-656-6766 + www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NS2-2-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909719
ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/15/2018 09:48

SDG#:

SBI22-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	26	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	1.7 J	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	. 1
14434	Perfluoroheptanoic acid	375-85-9	4.6	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	33	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	13	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	3.6	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	51	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	52	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:39	Marissa C Drexinger	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1			

1/26/19 C



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6766 • www.EurofineUS.com/LancLabsEnv

Sample Description: OU1-NS2-2-02 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909720
ELLE Group #: 2011587

Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/15/2018 09:49

SDG#:

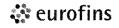
SBI22-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesul	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-I	methyl perfluorooctane	sulfonamidoacetic /	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	25	0.26	0.96	1.7	1
4434	Perfluorodecanoic acid	335-76-2	1.7 J	0.44	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1,
4434	Perfluoroheptanoic acid	375-85-9	4.7	0.35	1.0	1.7	1
4434	Perfluorohexanesulfonate	355-46-4	33	0.35	0.96	1.7	1
4434	Perfluorohexanoic acid	307-24-4	14	0.44	1.0	1.7	1
4434	Perfluorononanoic acid	375-95-1	3.8	0.35	1.0	1.7	1
4434	Perfluoro-octanesulfonate	1763-23-1	50	0.44	1.0	1.7	1
4434	Perfluorooctanoic acid	335-67-1	53	0.44	1.0	1.7	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Laboratory Sample Analysis Record												
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor							
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:48	Marissa C Drexinger	1							
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1							



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LanclabsEnv

Sample Description: OU1-MW-D-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9909721 ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

11/21/2018 11:00

Submittal Date/Time: Collection Date/Time:

11/15/2018 11:01

SDG#: SBI22-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-i	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	26	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	4.1	0.44	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	5.9	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	45	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	11	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	6.2	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	68	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	46	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 17:57	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table R-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17661 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NNP-2-01 Grab Groundwater

Barstow Site Inspection

ELLE Sample #: GW 9909722 ELLE Group #: 2011587

Gutierrez Canales Engineering

Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: SDG#: 11/21/2018 11:00 11/15/2018 12:53

SBI22-08

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 53/ table B	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.92	2.2	2.8	-1
	NEtFOSAA is the acronym for N-e						•
14434	NMeFOSAA	2355-31-9	N.D.	0.92	2.2	2.8	1
	NMeFOSAA is the acronym for N-r	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	14	0.28	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	3.1	0.46	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	3.1	0.37	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	25	0.37	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	5.7	0.46	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	4.8	0.37	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	60	0.46	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	32	0.46	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 18:15	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

Analysis Report

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-656-6766 • www.Eurofinst/S.com/LanclabsEnv

Sample Description: OU1-NPZ-17-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909723
ELLE Group #: 2011587

Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/15/2018 14:16

SDG#: SBI22-09

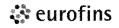
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 537 r table B-15		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	4.8	1.0	2.4	3.0	1
	NEtFOSAA is the acronym for N-ethyl	perfluorooctanesu	lfonamidoacetic Acid.	•			
14434	NMeFOSAA	2355-31-9	1.3 J	1.0	2.4	3.0	1
	NMeFOSAA is the acronym for N-meth	nyl perfluorooctane	sulfonamidoacetic A	cid.			
14434	Perfluorobutanesulfonate	375-73-5	18	0.30	1.1	2.0	1
14434	Perfluorodecanoic acid	335-76-2	10	0.51	1.2	2.0	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.51	1.2	2.0	1
14434	Perfluoroheptanoic acid	375-85-9	3.8	0.41	1.2	2.0	1
14434	Perfluorohexanesulfonate	355-46-4	30	0.41	1.1	2.0	1
14434	Perfluorohexanoic acid	307-24-4	4.9	0.51	1.2	2.0	1
14434	Perfluorononanoic acid	375-95-1	8.0	0.41	1.2	2.0	1
14434	Perfluoro-octanesulfonate	1763-23-1	120	0.51	1.2	2.0	1
14434	Perfluorooctanoic acid	335-67-1	44	0.51	1.2	2.0	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.61	1.2	2.0	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.61	1.2	2.0	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.51	1.2	2.0	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Laboi	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 18:24	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

1/24/198



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NS2-1-01 Grab Groundwater

Barstow Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909724
ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

Submittal Date/Time: 11/21 Collection Date/Time: 11/15

11/21/2018 11:00 11/15/2018 15:47

SDG#: SBI22-10

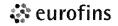
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53/ table B	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	1.8 J	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	fonamidoacetic Acid	i.			
14434	NMeFOSAA	2355-31-9	1.1 J	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-i	methyl perfluorooctane	sulfonamidoacetic A	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	6.7	0.26	0.97	1.8	1
4434	Perfluorodecanoic acid	335-76-2	3.1	0.44	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	1.1 J	0.35	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	17	0.35	0.97	1.8	1
4434	Perfluorohexanoic acid	307-24-4	1.2 J	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	3.2	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	49	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	28	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 18:33	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1





Analysis Report

2425 New Holland Pike, Lancaster, PA 17801 • 717-656-2300 • Fax: 717-656-6766 • www.EurofineUS.com/LancLabsEnv

OU1-NSI-3-01 Grab Groundwater Sample Description:

Barstow Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering GW 9909725 ELLE Sample #: **ELLE Group #:** 2011587

Matrix: Groundwater

Project Name: Submittal Date/Time:

11/21/2018 11:00

11/16/2018 09:01

Collection Date/Time: SDG#:

SBI22-11

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	MS Miscellaneous EPA 53/table B		ng/i	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	13	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	2.6	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	4.4	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	35	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	12	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	3.1	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	50	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	32	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Laboi	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 18:42	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

1/26/19 \$



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 + 717-656-2300 + Fax: 717-656-6766 + www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NSI-3-W-01 Grab Water

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909726
ELLE Group #: 2011587

ELLE Group #: Matrix: Water

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: SDG#: 11/21/2018 11:00 11/16/2018 09:30 SBI22-12EB

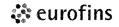
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-etl	hyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-n	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 18:51	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

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Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description:

OU1-NSI-3-W-02 Grab Water

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 990972

ELLE Group #: Matrix: Water GW 9909727 2011587

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/16/2018 09:35 SBI22-13EB

Collection Date/Time: SDG#:

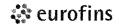
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesu	Ifonamidoacetic Ac	id.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.95	1.7	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
4434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.0	1.7	1
4434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.95	1.7	1
4434	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
4434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
4434	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.0	1.7	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	- 1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy	sis Record	nalysis Analyst Dilution te and Time Factor	
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 19:00	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

1/26/198



Analysis Report

2425 New Holland Pike, Lancaster, PA 17691 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NGW-04-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9909728

ELLE Group #: 2011587 Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/16/2018 10:42

SDG#:

SBI22-14

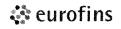
CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 5: table E	•	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	13	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	0.91 J	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	4.6	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	39	0.36	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	6.9	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	2.6	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	62	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	30	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 19:09	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

1/26/19



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NGW-06-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909729
ELLE Group #: 2011587

Matrix: Groundwater

Project Name: Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/16/2018 12:05

SDG#: SBI22-15

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 5	-	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesul	fonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	14	0.26	0.94	1.7	1
4434	Perfluorodecanoic acid	335-76-2	0.64 J	0.43	1.0	1.7	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
4434	Perfluoroheptanoic acid	375-85-9	3.3	0.34	1.0	1.7	1
4434	Perfluorohexanesulfonate	355-46-4	54	0.34	0.94	1.7	1
4434	Perfluorohexanoic acid	307-24-4	3.5	0.43	1.0	1.7	1
4434	Perfluorononanoic acid	375-95-1	2.6	0.34	1.0	1.7	1
4434	Perfluoro-octanesulfonate	1763-23-1	80	0.43	1.0	1.7	1
4434	Perfluorooctanoic acid	335-67-1	30	0.43	1.0	1.7	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	ratory S	Sample Analys	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/28/2018 19:18	Marissa C Drexinger	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330012	11/26/2018 16:00	Anthony C Polaski	1

Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-6766 • www.EurofinsUS.com/LancLabsEnv

OU1-MW-B-01 Grab Groundwater Sample Description:

Barstow Site Inspection

Barstow Site Inspection

Gutierrez Canales Engineering ELLE Sample #: GW 9909730 ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

11/21/2018 11:00 Submittal Date/Time:

Collection Date/Time:

11/16/2018 13:44 SDG#: SBI22-16

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	MS Miscellaneous EPA 53 table E	· · · · · · · · · · · · · · · · · · ·	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	28	0.26	0.94	1.7	1
14434	Perfluorodecanoic acid	335-76-2	3.3	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	4.8	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	26	0.34	0.94	1.7	1
14434	Perfluorohexanoic acid	307-24-4	10	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	5.6	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	73	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	32	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.51	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.51	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labo	ratory S	Sample Analy	sis Record		
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 20:21	Mark Makowiecki	1
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2390 • Fax: 717-656-6786 • www.EurofinsUS.com/LancLabsEnv

Sample Description: OU1-NPZ-18-01 Grab Groundwater

Barstow Site Inspection

Gutierrez Canales Engineering
ELLE Sample #: GW 9909731
ELLE Group #: 2011587

Matrix: Groundwater

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/16/2018 14:53

SDG#:

SBI22-17

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B	· ·	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	
14434					2.2	2.7	1
	NEtFOSAA is the acronym for N-e	• •					
4434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	24	0.27	1.0	1.8	1
4434	Perfluorodecanoic acid	335-76-2	3.3	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	5.2	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	23	0.36	1.0	1.8	1
4434	Perfluorohexanoic acid	307-24-4	16	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	5.2	0.36	1,1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	61	0.45	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	27	0.45	1.1	1.8	1
4434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
4434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

		Labor	Laboratory Sample Analysis Record					
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 20:30	Mark Makowiecki	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1	

LDC #: 44154G96 SDG #: SBI22/2011587 Laboratory: Eurofins

VALIDATION COMPLETENESS WORKSHEET Stage

Page: _/ Pag

METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
l.	Sample receipt/Technical holding times	A	
II.	LC/MS Instrument performance check	A	
III.	Initial calibration/ICV	AA	150×20/0.13. TML/10/<30/0
IV.	Continuing calibration/ISC	<u> </u>	EDX20/0.12. TML/1CV<30/0 CEX = 30/0.15C=30/0
V.	Laboratory Blanks	A	
VI.	Field blanks	NO	2B=3.12 SB=4,13
VII.	Matrix spike/Matrix spike duplicates	N	25
VIII.	Laboratory control samples	\triangleleft	1C5 B
IX.	Field duplicates	W	D=1+2.5+6
Χ.	Labeled Compounds	A.	
XI.	Compound quantitation RL/LOQ/LODs	N	
XII.	Target compound identification	N	
XIII.	System performance	N	
XIV.	Overall assessment of data	1 1	

Note: A = Acceptable

N = Not provided/applicable

SW = See worksheet

ND = No compounds detected

R = Rinsate FB = Field blank D = Duplicate

TB = Trip blank EB = Equipment blank SB=Source blank OTHER:

	Client ID	Lab ID	Matrix	Date
1	OU1-GW-9-01	9909715	Water	11/15/18
2	OU1-GW-9-02	9909716	Water	11/15/18
3	OU1-GW-9-W-01	9909717	Water	11/15/18
4	OU1-GW-9-W-02	9909718	Water	11/15/18
5 <u> </u>	OU1-NS2-2-01	9909719	Water	11/15/18
6 6	OU1-NS2-2-02	9909720	Water	11/15/18
7	OU1-MW-D-01	9909721	Water	11/15/18
8	OU1-NNP-2-01	9909722	Water	11/15/18
9	OU1-NPZ-17-01	9909723	Water	11/15/18
10	OU1-NS2-1-01	9909724	Water	11/15/18
11	OU1-NSI-3-01	9909725	Water	11/16/18
12	OU1-NSI-3-W-01	9909726	Water	11/16/18
13	OU1-NSI-3-W-02	9909727	Water	11/16/18
14	OU1-NGW-04-01	9909728	Water	11/16/18
15	OU1-NGW-06-01	9909729	Water	11/16/18

LDC #:44154G96 VALIDATION COMPLETENESS WORKSHI SDG #:SBI22/2011587 Stage 4 Laboratory:Eurofins METHOD: LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 537M)							Date: // // Page:
	Client ID				Lab ID	Matrix	Date
16	OU1-MW-B-01		·		9909730	Water	11/16/18
17	OU1-NPZ-18-01	****	·		9909731	Water	11/16/18
18							
19							
20							
lotes:							

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

WILTHOD, FF03/FF0AS		
A. NEtFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		`
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		

LDC#: 44154G96

VALIDATION FINDINGS WORKSHEET <u>Field Duplicates</u>

Page: 1 of 1
Reviewer: PG
2nd Reviewer: VV

METHOD: LC MS PFCs (EPA Method 537-Mod)

YNNA Were field duplicate pairs identified in this SDG?

YMNA Were target analytes detected in the field duplicate pairs?

	Concentration (ng/L)			
Compound	1	2	RPD (≤30%)	Qualifications (Parent Only)
С	16	15	6	
F	2.7	2.8	4	
Н	5.6	5.4	4	
ı	18	17	6	
J	18	16	12	
К	5.3	4.7	12	
М	54	53	2	
N	23	23	0	

	Concentra	ation (ng/L)	RPD	
Compound	5	5 6		Qualifications (Parent Only)
С	26	25	4	
F	1.7	1.7	0	
Н	4.6	4.7	2	
ı	33	33	0	
J	13	14	7	·
К	3.6	3.8	5	
М	51	50	2	
N	52	53	2	

V:\FIELD DUPLICATES\Field Duplicates\FD_Organics\2018\44154G96.wpd

Laboratory Data Consultants, Inc. Data Validation Report

Project/Site Name:

Barstow Site Inspection

LDC Report Date:

February 5, 2019

Parameters:

Perfluoroalkyl & Polyfluoroalkyl Substances

Validation Level:

Stage 4

Laboratory:

Eurofins

Sample Delivery Group (SDG): SBI23/2011591

Sample Identification	Laboratory Sample Identification	Matrix	Collection Date
OU1-NSP-3-01	9909753	Water	11/19/18
OU1-NSP-3-W-01	9909754	Water	11/19/18
OU1-NSP-3-W-02	9909755	Water	11/19/18
OU1-NC-8-01	9909756	Water	11/19/18
OU1-NC-6-01	9909757	Water	11/19/18
OU1-NC-1-01	9909758	Water	11/19/18
OU1-NNP-3-01	9909759	Water	11/20/18
OU1-NNP-3-W-01	9909760	Water	11/20/18
OU1-NNP-3-W-02	9909761	Water	11/20/18
OU1-NWP-5-01	9909762	Water	11/20/18

Introduction

This Data Validation Report (DVR) presents data validation findings and results for the associated samples listed on the cover page. Data validation was performed in accordance with the Final Field Sampling and Analysis Plan for Site Inspection Per- and Polyfluoroalkyl Substances, Nebo Main Base and Yermo Annex, Marine Corps Logistics Base, Barstow, CA (October 2018), the U.S. Department of Defense (DoD) Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.1 (2017), and a modified outline of the USEPA National Functional Guidelines (NFG) for Organic Superfund Methods Data Review (January 2017). Where specific guidance was not available, the data has been evaluated in a conservative manner consistent with industry standards using professional experience.

The analyses were performed by the following method:

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) by Environmental Protection Agency (EPA) Method 537 Modified

All sample results were subjected to Stage 4 data validation, which is comprised of the quality control (QC) summary forms as well as the raw data, to confirm sample quantitation and identification.

The following are definitions of the data qualifiers utilized during data validation:

- J (Estimated): The compound or analyte was analyzed for and positively identified by the laboratory; however the reported concentration is estimated due to non-conformances discovered during data validation.
- U (Non-detected): The compound or analyte was analyzed for and positively identified by the laboratory; however the compound or analyte should be considered non-detected at the reported concentration due to the presence of contaminants detected in the associated blank(s).
- UJ (Non-detected estimated): The compound or analyte was reported as not detected by the laboratory; however the reported quantitation/detection limit is estimated due to non-conformances discovered during data validation.
- R (Rejected): The sample results were rejected due to gross non-conformances discovered during data validation. Data qualified as rejected is not usable.
- NA (Not Applicable): The non-conformance discovered during data validation demonstrates a high bias, while the affected compound or analyte in the associated sample(s) was reported as not detected by the laboratory and did not warrant the qualification of the data.

A qualification summary table is provided at the end of this report if data has been qualified. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

I. Sample Receipt and Technical Holding Times

All samples were received in good condition and cooler temperatures upon receipt met validation criteria.

All technical holding time requirements were met.

II. LC/MS Instrument Performance Check

Instrument performance was checked and the requirements were met.

III. Initial Calibration and Initial Calibration Verification

Initial calibration was performed as required by the method.

For compounds where average calibration factors were utilized, percent relative standard deviations (%RSD) were less than or equal to 20.0%.

A curve fit, based on the initial calibration, was established for quantitation. The coefficient of determination (r²) was greater than or equal to 0.990.

For each calibration standard, all compounds were within 70-130% of their true value.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the initial calibration verification (ICV) standard were less than or equal to 30.0% for all compounds.

IV. Continuing Calibration

Continuing calibration was performed at required frequencies.

The percent differences (%D) were less than or equal to 30.0% for all compounds.

The signal to noise (S/N) ratio was within validation criteria for all compounds.

The percent differences (%D) of the instrument sensitivity check (ISC) were less than or equal to 30.0% for all compounds.

All compound concentrations were at the limit of quantitation (LOQ) for the ISC standard.

V. Laboratory Blanks

Laboratory blanks were analyzed as required by the method. No contaminants were found in the laboratory blanks.

VI. Field Blanks

Samples OU1-NSP-3-W-01 and OU1-NNP-3-W-01 were identified as equipment blanks. No contaminants were found.

Samples OU1-NSP-3-W-02 and OU1-NNP-3-W-02 were identified as source blanks. No contaminants were found.

VII. Matrix Spike/Matrix Spike Duplicates

The laboratory has indicated that there were no matrix spike (MS) and matrix spike duplicate (MSD) analyses specified for the samples in this SDG, and therefore matrix spike and matrix spike duplicate analyses were not performed for this SDG.

VIII. Laboratory Control Samples

Laboratory control samples (LCS) and laboratory control samples duplicates (LCSD) were analyzed as required by the method. Percent recoveries (%R) were within QC limits. Relative percent differences (RPD) were within QC limits.

IX. Field Duplicates

No field duplicates were identified in this SDG.

X. Labeled Compounds

All percent recoveries (%R) for labeled compounds used to quantitate target compounds were within QC limits.

XI. Compound Quantitation

All compound quantitations met validation criteria.

The laboratory indicated that PFAS are currently being reported as the sum of the branched and linear isomers so both peaks were integrated.

XII. Target Compound Identifications

All target compound identifications met validation criteria.

XIII. System Performance

The system performance was acceptable.

XIV. Overall Assessment of Data

The analysis was conducted within all specifications of the method. No results were rejected in this SDG.

The quality control criteria reviewed were met and are considered acceptable. Based upon the data validation all results are considered valid and usable for all purposes.

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Data Qualification Summary - SDG
SBI23/2011591

No Sample Data Qualified in this SDG

Barstow Site Inspection Perfluoroalkyl & Polyfluoroalkyl Substances - Laboratory Blank Data Qualification Summary - SDG SBI23/2011591

No Sample Data Qualified in this SDG

Barstow Site Inspection
Perfluoroalkyl & Polyfluoroalkyl Substances - Field Blank Data Qualification
Summary - SDG SBI23/2011591

No Sample Data Qualified in this SDG

Analysis Report

Gutierrez Canales Engineering ELLE Sample #: GW 9909753

2011591

ELLE Group #:

Matrix: Groundwater

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-666-6786 • www.Eurofinstis.com/LanclabsEny

Sample Description:

OU1-NSP-3-01 Grab Groundwater

Barstow Site Investigation

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/19/2018 10:59

SDG#:

SBI23-01

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/i	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	• 1
	NEtFOSAA is the acronym for N-et	thyl perfluorooctanesi	ulfonamidoacetic A	cid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-r	nethyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	0.60 J	0.43	1.0	1.7	· 1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 20:39	Mark Makowiecki	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1			

1/26/19



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17661 • 717-666-2300 • Fax: 717-666-6786 • www.EurolineUS.com/LancLabeEnv

Sample Description:

OU1-NSP-3-W-01 Grab Water

Barstow Site Investigation

ELLE Sample #: GW 9909754 ELLE Group #: Matrix: Water

2011591

Project Name:

SDG#:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/21/2018 11:00 11/19/2018 11:15 SBI23-02EB

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 53/ table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ılfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	. 1
	NMeFOSAA is the acronym for N-i	methyl perfluorooctan	esulfonamidoacetic	Acid.			
4434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.99	1.8	1
4434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	. 1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 20:48	Mark Makowiecki	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1			



Analysis Report

Gutierrez Canales Engineering

GW 9909755

2011591

ELLE Sample #:

ELLE Group #:

Matrix: Water

2425 New Holland Pike, Lancaster, PA 17601 • 717-666-2300 • Fax: 717-656-6786 • www.Eurofinst/S.com/LancLabsEnv

Sample Description:

OU1-NSP-3-W-02 Grab Water

Barstow Site Investigation

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

SDG#:

SBI23-03EB

11/21/2018 11:00 11/19/2018 11:20

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 5: table E	-	ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.87	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.87	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.96	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.44	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.96	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.44	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.44	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.44	1.0	1.7	1 1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 20:57	Mark Makowiecki	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1			



Analysis Report

Gutierrez Canales Engineering

GW 9909756

2011591

ELLE Sample #:

ELLE Group #:

Matrix: Groundwater

2425 New Holland Pike, Lancaster, PA 17691 • 717-686-2300 • Fax; 717-686-6786 • www.EurofinsUS.com/LancLabaEnv

Sample Description: 0

OU1-NC-8-01 Grab Groundwater

Barstow Site Investigation

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/19/2018 12:55

SDG#:

SBI23-04

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	MS Miscellaneous EPA 5: table B		ng/l	ng/l	ng/l	ng/i	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	ulfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctan	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	1.2 J	0.26	0.94	1.7	1
14434	Perfluorodecanoic acid	335-76-2	0.56 J	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	2.3	0.34	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	2.3	0.34	0.94	1.7	1
14434	Perfluorohexanoic acid	307-24-4	8.2	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	0.71 J	0.34	1.0	1.7	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	15	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 21:06	Mark Makowiecki	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1		

1/26/198



Analysis Report

Gutierrez Canales Engineering

2425 New Holland Pike, Lancaster, PA 17881 • 717-684-2300 • Fax: 717-664-6786 • www.EurofinsUS.com/LancLabaEmy

Sample Description: OU1-NC-6-01 Grab Groundwater

Barstow Site Investigation

ELLE Sample #: GW 9909757 ELLE Group #: 2011591 Matrix: Groundwater

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

Project Name:

11/21/2018 11:00 11/19/2018 14:35

SDG#:

SBI23-05

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
_C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.98	2.4	2.9	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.98	2.4	2.9	1
	NMeFOSAA is the acronym for N-I	methyl perfluorooctane	sulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	0.30 J	0.29	1.1	2.0	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.49	1.2	2.0	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.49	1.2	2.0	1
14434	Perfluoroheptanoic acid	375-85-9	1.3 J	0.39	1.2	2.0	1
14434	Perfluorohexanesulfonate	355-46-4	0.70 J	0.39	1.1	2.0	1
14434	Perfluorohexanoic acid	307-24-4	6.3	0.49	1.2	2.0	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.39	1.2	2.0	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.49	1.2	2.0	1
14434	Perfluorooctanoic acid	335-67-1	7.6	0.49	1.2	2.0	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.59	1.2	2.0	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.59	1.2	2.0	. 1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.49	1.2	2.0	1

Sample Comments

Laboratory Sample Analysis Pocord

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18337008	12/04/2018 16:40	Joshua P Trost	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	2	18337008	12/03/2018 16:00	Danielle D McCully	1		



Analysis Report

Gutierrez Canales Engineering

GW 9909758

2011591

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17891 • 717-886-2300 • Fax: 717-666-6786 • www.EurolinsUS.com/LancLabaEnv

Sample Description:

OU1-NC-1-01 Grab Groundwater

Barstow Site Investigation

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/19/2018 16:32

SDG#:

Project Name:

SBI23-06

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS/MS Miscellaneous EPA 537 mod QSM 5.1 table B-15		ng/l	ng/l	ng/l	ng/l		
14434	NEtFOSAA	2991-50-6	N.D.	0.91	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	ethyl perfluorooctanesu	lfonamidoacetic A	Acid.			
14434	NMeFOSAA	2355-31-9	N.D.	0.91	2.2	2.7	. 1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoaceti	ic Acid.			
14434	Perfluorobutanesulfonate	375-73-5	0.29 J	0.27	1.0	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.46	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.46	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	1.7 J	0.37	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	0.76 J	0.37	1.0	1.8	1
14434	Perfluorohexanoic acid	307-24-4	8.3 .	0.46	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.37	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.46	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	8.6	0.46	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.55	1.1	1.8	· 1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.55	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.46	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 21:24	Mark Makowiecki	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1	1	18330013	11/26/2018 16:00	Anthony C Polaski	1			



Analysis Report

2425 New Holland Pike, Lancaster, PA 17681 • 717-866-2300 • Fax: 717-656-6786 • www.EurofinsU6.com/LancLabsEny

Sample Description:

OU1-NNP-3-01 Grab Groundwater

Barstow Site Investigation

ELLE Sample #:

Gutierrez Canales Engineering GW 9909759

ELLE Group #: Matrix: Groundwater

2011591

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time: 11/21/2018 11:00 11/20/2018 08:21

SDG#:

Project Name:

SBI23-07

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
.C/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.88	2.1	2.6	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesui	lfonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.88	2.1	2.6	1
	NMeFOSAA is the acronym for N-i	methyl perfluorooctane	sulfonamidoacetic /	Acid.			,
14434	Perfluorobutanesulfonate	375-73-5	14	0.26	0.96	1.8	1
4434	Perfluorodecanoic acid	335-76-2	2.9	0.44	1.1	1.8	1
4434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
4434	Perfluoroheptanoic acid	375-85-9	3.0	0.35	1.1	1.8	1
4434	Perfluorohexanesulfonate	355-46 - 4	25	0.35	0.96	1.8	1
4434	Perfluorohexanoic acid	307-24-4	4.7	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	3.6	0.35	1.1	1.8	1
4434	Perfluoro-octanesulfonate	1763-23-1	45	0.44	1.1	1.8	1
4434	Perfluorooctanoic acid	335-67-1	30	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
4434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	. 1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 21:42	Mark Makowiecki	1		
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1		



Analysis Report

Gutierrez Canales Engineering

GW 9909760

2011591

ELLE Sample #:

ELLE Group #:

Matrix: Water

2425 New Holland Pike, Lancaster, PA 17691 • 717-886-2300 • Fax: 717-866-8786 • www.EurolineUS.com/LanclabaEnv

Sample Description:

OU1-NNP-3-W-01 Grab Water **Barstow Site Investigation**

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/21/2018 11:00 11/20/2018 08:30 SBI23-08EB

Collection Date/Time:

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	6/MS Miscellaneous EPA 5 table E		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.90	2.2	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.			
14434	NMeFOSAA	2355-31-9	N.D.	0.90	2.2	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	sulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.27	0.99	1.8	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.45	1.1	1.8	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.45	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.36	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.36	0.99	1.8	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.45	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.36	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.45	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.54	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.54	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.45	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record									
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor			
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 21:51	Mark Makowiecki	1			
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1			

1/26/19 x-



Analysis Report

Gutierrez Canales Engineering

GW 9909761

2011591

ELLE Sample #:

ELLE Group #:

Matrix: Water

2425 New Hotland Pike, Lancaster, PA 17891 • 717-456-2300 • Fax: 717-456-5786 • www.EurofinsUS.com/LanclabsEnv

Sample Description:

OU1-NNP-3-W-02 Grab Water

Barstow Site Investigation

Project Name:

Barstow Site Inspection

Submittal Date/Time:

11/21/2018 11:00

Collectio SDG#:	n Date/Time:	11/20/2018 08:35 SBI23-09EB
CAT No.	Analysis Name	CA

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	N.D.	0.86	2.1	2.6	1
	NEtFOSAA is the acronym for N-et	hyl perfluorooctanesul	fonamidoacetic Aci	i.			
14434	NMeFOSAA	2355-31-9	N.D.	0.86	2.1	2.6	1
	NMeFOSAA is the acronym for N-n	nethyl perfluorooctane	sulfonamidoacetic /	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	N.D.	0.26	0.95	1.7	1
14434	Perfluorodecanoic acid	335-76-2	N.D.	0.43	1.0	1.7	1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.43	1.0	1.7	1
14434	Perfluoroheptanoic acid	375-85-9	N.D.	0.35	1.0	1.7	1
14434	Perfluorohexanesulfonate	355-46-4	N.D.	0.35	0.95	1.7	1
14434	Perfluorohexanoic acid	307-24-4	N.D.	0.43	1.0	1.7	1
14434	Perfluorononanoic acid	375-95-1	N.D.	0.35	1.0	1.7	· 1
14434	Perfluoro-octanesulfonate	1763-23-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorooctanoic acid	335-67-1	N.D.	0.43	1.0	1.7	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.52	1.0	1.7	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.52	1.0	1.7	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.43	1.0	1.7	1

Sample Comments

CA ELAP Lab Certification No. 2792

Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/28/2018 22:00	Mark Makowiecki	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/26/2018 16:00	Anthony C Polaski	1	

1/4/19



Lancaster Laboratories Environmental

Analysis Report

Gutierrez Canales Engineering

GW 9909762

2011591

ELLE Sample #:

Matrix: Groundwater

ELLE Group #:

2425 New Holland Pike, Lancaster, PA 17661 • 717-886-2300 • Fax: 717-686-9786 • www.EurolinsUS.com/Lanci.sbsEnv

Sample Description:

W OU1-NMP-5-01 Grab Groundwater

Barstow Site Investigation

Project Name:

Barstow Site Inspection

Submittal Date/Time: Collection Date/Time:

11/21/2018 11:00 11/20/2018 10:19

SDG#:

SBI23-10

CAT No.	Analysis Name	CAS Number	As Received Result	As Received Detection Limit*	As Received Limit of Detection	As Received Limit of Quantitation	DF
LC/MS	/MS Miscellaneous EPA 53 table B		ng/l	ng/l	ng/l	ng/l	
14434	NEtFOSAA	2991-50-6	2.6 J	0.89	2.1	2.7	1
	NEtFOSAA is the acronym for N-e	thyl perfluorooctanesu	Ifonamidoacetic Aci	d.	ř		
14434	NMeFOSAA	2355-31-9	N.D.	0.89	2.1	2.7	1
	NMeFOSAA is the acronym for N-	methyl perfluorooctane	esulfonamidoacetic	Acid.			
14434	Perfluorobutanesulfonate	375-73-5	26	0.27	0.98	1.8	1
14434	Perfluorodecanoic acid	335-76-2	4.0	0.44	1.1	1.8	· 1
14434	Perfluorododecanoic acid	307-55-1	N.D.	0.44	1.1	1.8	1
14434	Perfluoroheptanoic acid	375-85-9	6.8	0.35	1.1	1.8	1
14434	Perfluorohexanesulfonate	355-46-4	79	0.35	0.98	1.8	1
14434	Perfluorohexanoic acid	307-24-4	39	0.44	1.1	1.8	1
14434	Perfluorononanoic acid	375-95-1	13	0.35	1.1	1.8	1
14434	Perfluoro-octanesulfonate	1763-23-1	97	0.44	1.1	1.8	1
14434	Perfluorooctanoic acid	335-67-1	23	0.44	1.1	1.8	1
14434	Perfluorotetradecanoic acid	376-06-7	N.D.	0.53	1.1	1.8	1
14434	Perfluorotridecanoic acid	72629-94-8	N.D.	0.53	1.1	1.8	1
14434	Perfluoroundecanoic acid	2058-94-8	N.D.	0.44	1.1	1.8	1

Sample Comments

CA ELAP Lab Certification No. 2792

	Laboratory Sample Analysis Record							
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor	
14434	PFAS in Water by LC/MS/MS-DoD	EPA 537 mod QSM 5.1 table B-15	1	18330013	11/29/2018 21:32	Marissa C Drexinger	1	
14465	PFAS Water Prep - DoD	EPA 537 mod QSM 5.1	1	18330013	11/26/2018 16:00	Anthony C Polaski	1	

1/26/19 4

SDG#	:44154H96		PLETENESS	WORKSHEET	F	Date: ///// Page: _/ef_/ Reviewer:
	•	alloui Cubata	naaa (EDA Ma			Reviewer: M
VIC I N	OD: LC/MS Perfluoroalkyl & Polyfluoroa	aikyi Substa	nces (EPA IVIE	etnod 537 IVI)		
	amples listed below were reviewed for e ion findings worksheets.	each of the fo	ollowing valida	tion areas. Validatio	n findings are	noted in attache
	Validation Area			Comm	ents	
1.	Sample receipt/Technical holding times	A				
II.	LC/MS Instrument performance check	A				
III.	Initial calibration/ICV	AA	RS70<2	80. r2, TM	0/1ex=	30%
IV.	Continuing calibration/ISC	4	CCV/1:	50 < 300	7	
V.	Laboratory Blanks	4		,		
VI.	Field blanks	ND	ZB=2	.8 SF	3=3,6	7
VII.	Matrix spike/Matrix spike duplicates	Λ/	19			
VIII.	Laboratory control samples	4	10000			· · · · · · · · · · · · · · · · · · ·
IX.	Field duplicates		7			
X.	Labeled Compounds	4				
XI.	Compound quantitation RL/LOQ/LODs	A				
XII.	Target compound identification	A				
XIII.	System performance	A				,
XIV.	Overall assessment of data	X				
Note:	N = Not provided/applicable R = R	No compounds linsate Field blank	s detected	D = Duplicate TB = Trip blank EB = Equipment blan	OTHER:	rce blank
	Client ID			Lab ID	Matrix	Date
1 0	OU1-NSP-3-01			9909753	Water	11/19/18
1 (OU1-NSP-3-W-01			9909754	Water	11/19/18
1 1	OU1-NSP-3-W-02			9909755	Water	11/19/18
	OU1-NC-8-01			9909756	Water	11/19/18
	OU1-NC-6-01			9909757	Water	11/19/18
	OU1-NC-1-01			9909758	Water	11/19/18
7 (OU1-NNP-3-01			9909759	Water	11/20/18
8 (OU1-NNP-3-W-01			9909760	Water	11/20/18
9 (OU1-NNP-3-W-02			9909761	Water	11/20/18
10	OU1-NNP-5-01			9909762	Water	11/20/18
11						
12						

LDC #: 44154 H 96

VALIDATION FINDINGS CHECKLIST

Page:	
Reviewer:	9
2nd Reviewer:	500

Method: LCMS (EPA Method 537 Modified)

Validation Area	Yes	No	NA	Findings/Comments
i disphilical holding times:				
Were all technical holding times met?				
Was cooler temperature criteria met?			res suese	
III. IC/Mis institution regionaling direction in the state of the stat				
Were the instrument performance reviewed and found to be within the validation criteria?				
(tila tatua) salisiation (1)			-4	
Did the laboratory perform a 5 point calibration prior to sample analysis?				
Were all percent relative standard deviations (%RSD) ≤ 20%?				
Was a curve fit used for evaluation? If yes, did the initial calibration meet the curve fit criteria of ≥ 0.990?				
Were all analytes within 70-130% or percent differences (%D) ≤30% of their true value for each calibration standard?				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?				·
Ma Jantalko allaration Varingation				
Was an initial calibration verification standard analyzed after each initial calibration for each instrument?				
Were all percent differences (%D) ≤ 30%?				
IV- Cantinuing calibration				
Was a continuing calibration analyzed daily?	/			
Were all percent differences (%D) of the continuing calibration ≤ 30%?				
Was the signal to noise (S/N) ratio for all compounds within the validation criteria?	/			
Were all percent differences (%D) of the Instrument Sensitivity Check ≤ 30%?		-2000	odsy familiary	
V. Laboratory Blanks				A STATE OF THE STA
Was a laboratory blank associated with every sample in this SDG?				
Was a laboratory blank analyzed for each matrix and concentration?				
Was there contamination in the laboratory blanks?			National of the Control of the Contr	
Vint Tardonanks 1 41				
Were field blanks identified in this SDG?				
Were target compounds detected in the field blanks?				
VIII Manu spike Matrix spike duplicates a + + + + + + + + + + + + + + + + +			en.	
Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG?				·
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits?				
IX Laboratory control samples 13 - 4 - 4 7 1 1 14 - 1 - 1 15 15 15 15 15 15 15 15 15 15 15 15 1				Therese Sugar State of the Sugar Sugar Sugar
Was an LCS analyzed per extraction batch for this SDG?				



VALIDATION FINDINGS CHECKLIST

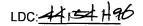
Page: Of Pag

Validation Area	Yes	No	NA	Findings/Comments
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits?				
X Frieddoupleates: 4, 19, 19, 20, 19				
Were field duplicate pairs identified in this SDG?		/		
Were target compounds detected in the field duplicates?			/	
Vir Labelladrochinourius				
Were labeled compound percent recoveries (%R) within the QC limits?				
XII) Composinglicusmitication				
Did the laboratory reporting limits (RL) meet the QAPP RLs?				
Did reported results include both branched and linear isomers?				
Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the compound?				
Were compound quantitation and RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?		-		
XIII Transet earnioùind liteartification				
Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA?				
XIV. System performance				
System performance was found to be acceptable.				
XUIN Overall assessment of cold it is a party of the part				
Overall assessment of data was found to be acceptable.				

TARGET COMPOUND WORKSHEET

METHOD: PFOS/PFOAs

METHOD: PPOSIPPOAS		
A. NEIFOSAA		
B. NMeFOSAA		
C. Perfluorobutanesulfonate		
D. Perfluorobutanoic acid		
E. Perfluorodecanesulfonate		
F. Perfluorodecanoic acid		
G. Perfluorododecanoic acid		
H. Perfluoroheptanoic acid		
I. Perfluorohexanesulfonate		
J. Perfluorohexanoic acid		
K. Perfluorononanoic acid		
L. Perfluorooctanesulfonamide		
M. Perfluoro-octanesulfonate		
N. Perfluorooctanoic acid		
O. Perfluoropentanoic acid		
P. Perfluorotetradecanoic acid		
Q. Perfluorotridecanoic acid		
R. Perfluoroundecanoic acid		



Page: ____of ___ Reviewwe: ______ 2nd Reviewer: ______

Method: PFACs (EPA Method 537)

Calibration			(Y)	(X)
Date	Analyte	Standard	Concentration	Area
11/28/2018	PFOA	1	0.040	0.0412551
		2	0.120	0.1032343
		3	0.400	0.4251480
		4	1.600	1.6180283
		5	4.000	3.9501116
		6	10.000	9.4990554
		7	20.000	17.3013685

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.88598307	0.967630
Correlation Coefficient	0.999027	0.99955
Coefficient of Determination (r^2)	0.998054	

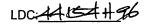


Page: Pof

Method: PFACs (EPA Method 537)

Calibration			(Y)	(X)
Date	Analyte	Standard	Concentration	Area
11/28/2018	PFOS	1	0.039	0.0410015
		2	0.116	0.1089653
		3	0.387	0.4501466
		4	1.548	1.6273983
		5	3.870	4.3562471
		6	9.686	10.8403194
		7	19.372	22.4809355

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.15088058	1.139530
Correlation Coefficient	0.999874	0.99969
Coefficient of Determination (r^2)	0.999747	



Page: 3 of 4 Reviewwe: 2nd Reviewer: 100

Method: PFACs (EPA Method 537)

Calibration			(Y)	(X)
Date	Analyte	Standard	Concentration	Area
12/4/2018	PFOA	1	0.040	0.0410375
		2	0.120	0.1078823
		3	0.400	0.4266144
		4	1.600	1.5216516
		5	4.000	4.0864872
		6	10.000	9.5327125
		7	20.000	18.4415655

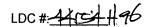
	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	0.93134901	0.944630
Correlation Coefficient	0.999759	0.99936
Coefficient of Determination (r^2)	0.999518	



Method: PFACs (EPA Method 537)

Calibration Date	Analyte	Standard	(Y) Concentration	(X)
		Standard	Concentration	Area
12/4/2018	PFOS	1	0.039	0.0470742
		2	0.116	0.1128684
		3	0.387	0.4282712
	·	4	1.548	1.6316595
		5	3.870	4.2854714
		6	9.686	10.5344483
		7	19.372	22.4560318

	calculated	Reported
Constant	0.000000	0.0000
X Coefficient(s)	1.14323595	1.127850
Correlation Coefficient	0.999666	0.99945
Coefficient of Determination (r^2)	0.999332	



VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	of
Reviewer:	9-
2nd Reviewer:	-100

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

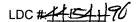
 $A_x =$ Area of compound,

A_{is} = Area of associated internal standard

 C_x = Concentration of compound, C_{is} = Concentration of internal standard

					Reported	Recalculated	Reported	Recalculated
# .	Standard ID	Calibration Date	Compound (Reference Internal Standard)	Average RRF (initial)	RRF (CC)	RRF (CC)	%D	%D
1	2413C	1=/4/18	(1st internal standard)	0.60	0.60	0,60	0.79	0.79
	CCL2		+F05 (2nd internal standard)	0.56	0.45	0.45	19.53	19.95
			(3rd internalstandard)					
2	2V2-CA23	11/58/18	(1st internal standard)	200	2.16	216216	8.20	8,20
		/ / '	(2nd internal standard)	1.85	1.87	1.87	1.00	1.00
		ŕ	(3rd internalstandard)					
3	CV3_CXA	11/28/18	(1st internal standard)	8,00	7.55	7.55	5.57	5.57
	1	/ /	(2nd internal standard)	7.40	6.90	6.90	6.69	6.69
		}	(3rd internalstandard)					· · · · · ·
4	OKBC-	168/8	(1st internal standard)	0.60	0.55	0.55	9.12	9.12
13	CX12	1/	(2nd internal standard)	0.56	OAT	047	16.20	16.94
			(3rd internalstandard)					,

Comments:	Refer to Continuing	Calibration findings	worksheet for lis	t of qualifications	and associated	samples when r	eported results do	not agree within	10.0% of the
recalculated i	results								



VALIDATION FINDINGS WORKSHEET Continuing Calibration Results Verification

Page:_	\rightarrow of \rightarrow
Reviewer:	9
2nd Reviewer:	Ne

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the compounds identified below using the following calculation:

% Difference = 100 * (ave. RRF - RRF)/ave. RRF $RRF = (A_x)(C_{is})/(A_{is})(C_x)$

Where: ave. RRF = initial calibration average RRF

RRF = continuing calibration RRF

C, = Concentration of compound,

A, = Area of compound,

A_{is} = Area of associated internal standard C_{is} = Concentration of internal standard

Reported Recalculated Reported Recalculated Calibration Compound (Reference Internal Standard) RRF Average %D %D Standard ID Date RRF (initial) (CC) (1st internal standard) (2nd internal standard) (3rd internalstandard) (1st internal standard) (2nd internal standard) (3rd internalstandard) (1st internal standard) 3 (2nd internal standard) (3rd internalstandard) (1st internal standard) (2nd internal standard) (3rd internalstandard)

Comments:	Refer to Continuing	Calibration finding	s worksheet for	list of qualifications	and associated	l samples when	reported resu	<u>lts do not agre</u>	<u>e within</u>	10.0% of th	<u>ie</u>
recalculated i	results										
					, , , , , , , , , , , , , , , , , , , ,					-	_
,											
				· · · · · · · · · · · · · · · · · · ·						·· · · · · · · · · · · · · · · · · · ·	_

LUCHATILITY 10

VALIDATION FINDINGS WORKSHEET Laboratory Control Sample/Laboratory Control Sample Duplicates Results Verification

Page:_/_of/_	
Reviewer: 9	-
2nd Reviewer:	

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

The percent recoveries (%R) and Relative Percent Difference (RPD) of the laboratory control sample and laboratory control sample duplicate were recalculated for the compounds identified below using the following calculation:

% Recovery = 100 * (SC/SA

Where: SSC = Spike concentration

SA = Spike added

RPD = I LCSC - LCSDC I * 2/(LCSC + LCSDC)

LCS/LCSD samples: 405/0 3300/3

Compound	Ad	ike ded 5/1	Spike Concentration () 3 ()		I CS Percent Recovery		LCSD Percent Recovery		L CS/I CSD RPD	
	LCS	LCSD	LCS	LCSD	Reported	Recalc.	Reported	Recalc.	Reported	Recalculated
272A	5.44	८4 4	5,49	5.63	101	101	10-1	104	3	3
# 1 705	5.20	5.20	4.21	4.22	8	3	51	8	0	0
				,						
										·
						•				2
			·							
·										
		·								·

Comments:	Refer to Laboratory Control Sample/Labora	tory Control Sample Duplication	ates findings worksheet fo	or list of qualifications and	associated samples wi	nen reported
results do n	ot agree within 10.0% of the recalculated re	sults.				
<u> </u>				 :		

Privileged and Confidential

LCSCLC-LCMS.wpd

LDC #: 4454496

%S

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VALIDATION FINDINGS WORKSHEET Sample Calculation Verification

Were all recalculated results for detected target compounds agree within 10.0% of the reported results?

Page:_	/of_/
Reviewer:	4
2nd reviewer:	SVe

METHOD: LC/MS PFOS/PFOAs (EPA Method 537M)

Percent solids, applicable to soil and solid matrices

Factor of 2 to account for GPC cleanup

Concentration = $\frac{(A_{\bullet})(I_{\bullet})(V_{\bullet})(DF)(2.0)}{(A_{i\bullet})(RRF)(V_{\bullet})(V_{i})(\%S)}$			Example:
A _x	=	Area of the characteristic ion (EICP) for the compound to be measured	Sample I.D, \$\frac{1}{2}
A_{is}	=	Area of the characteristic ion (EICP) for the specific internal standard	9
i,	=	Amount of internal standard added in nanograms (ng)	Conc. = (13/23.7)(4.78)() ()()()
V _°	=	Volume or weight of sample extract in milliliters (ml) or grams (g).	
V_i	=	Volume of extract injected in microliters (ul)	=0.604 NB/2
V _t	=	Volume of the concentrated extract in microliters (ul)	
Df	=	Dilution Factor.	

Were all reported results recalculated and verified for all level IV samples?

#	Sample ID	Compound	Reported Concentration (ルタル)	Calculated Concentration ()	Qualification
		PFOS	0.60		
				·	
		·			
					·
					·
				_	·
		·			
			·		

LDC #: 44154

EDD POPULATION COMPLETENESS WORKSHEET

Date: 1 29 Page: 1 of 1 2nd Reviewer:

The LDC job number listed above was entered by _______.
Entered from Body or Summary

	· · · · · · · · · · · · · · · · · · ·		
	EDD Process		Comments/Action
I.	EDD Completeness	-	
Ia.	- All methods present?	Ч	
Ib.	- All samples present/match report?	4	
Ic.	- All reported analytes present?	4	
Id.	- 10% or 1/00% verification of EDD?	4	
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II.	EDD Preparation/Entry	-	
IIa.	- Carryover U/J?	4	
IIb.	- Reason Codes used? If so, note which codes.		
IIc.	- Additional Information (QC Level, Validator, Validated Y/N, etc.)	4	
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III.	Reasonableness Checks	-	
IIIa.	- Do all qualified ND results have ND qualifier (e.g. UJ)?	4	
IIIb.	- Do all qualified detect results have detect qualifier (e.g. J)?	4	
IIIc.	- If reason codes are used, do all qualified results have reason code field populated, and vice versa?		
IIId.	-Does the detect flag require changing for blank qualifier? If so, are all U results marked ND?	4/4	
IIIe.	- Do blank concentrations in report match EDD where data was qualified due to blank contamination?	ч	
IIIf.	- Were multiple results reported due to dilutions/reanalysis? If so, were results qualified appropriately?	+	
IIIg.	-Are there any discrepancies between the data packet and the EDD?	N	

Notes:	see discrepancy sheet	
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